Bird and bat monitoring.
Quarterly Spring report.

ZARAFSHAN WIND FARM

CLIENT: WOOD GROUP PLC

Date: July 2020

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1. INTRODUCTION

This report is provided by Juru Energy Ltd. by request of Wood Group PLC as a part of Bird and Bat monitoring Project for Zarafshan Wind Farm in Navoi region.

The Renewable energy resources Sector in Uzbekistan started to develop rapidly after the Law “On the Use of Renewable Resources of Energy” No.ZRU-539 was passed on the 21 May 2019, closely followed by the Decree “On Acceleration of Measures to Improve Energy Efficiency of Economic Sectors and Social Spheres, Implementation of Energy Saving Technologies and Developing of Renewable Energy Resources” No. PP-4422 by the President of Uzbekistan on 22 August 2019.

Wind power is defined under Uzbekistan law as renewable energy resource along with solar, geothermal, hydro power, and biomass energy.

Bird baseline studies are necessary part of the Environmental Impact Assessment for Wind Power Plant projects. The primary objective of bird baseline studies at wind farms is to estimate the risk that the proposed project poses to characteristic bird species.

Birds are the most mobile animals among vertebrates and are an important bio indicator of the changing environment. As far as we know, the impact of wind power plants on birds depends on several factors, such as the topography of a particular site and the entire range, the surrounding ecosystems, natural habitats, the number of bird species permanently resident or migratory in the vast project area, etc.

The main potential hazards to birds from windfarms are:

- disturbance leading to displacement or exclusion, including barriers to movement

- collision mortality
- loss of, or damage to, habitat resulting from wind turbines and associated infrastructure.

Being previously involved in projects directly connected with Wind-power stations (Support for the Implementation of Wind Auctions in Uzbekistan), Juru Energy Ltd. has experience in bird monitoring.

The Zarafshan Wind Farm Project is being developed by Wood Group. Juru Energy provides local support for ESIA for the Zarafshan Wind Project in Uzbekistan.

In the framework of the Zarafshan Wind Farm Project, bird survey was conducted in the project area in Spring 2020 (February 21, 2020 – May 31, 2020). The purpose of ornithological monitoring was to conduct systematic field studies at specific vantage points to assess bird species composition that occur within the project's area of influence, its abundance and territorial distribution, the nature of the stay, and daily activity of birds during spring migration and the beginning of nesting and also to identify birds that are of conservation interest under IUCN and Uzbekistan Redlist.

This report is a statement of work made by Juru Enery` local ornitologists Alisher Atakhodjaev and R.A. Sohibnazarov. However, it should be noted that help in collecting survey material was also provided by the company’s employees, and expedition members.

2. SURVEY METHODS

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The range of detection and identification of large species as golden eagles was up to 2 km, and small passerines 50 m. Directions and flight altitude were taken into account.

The observations were carried out at 14 Vantage points (Table 1). The number and location of Vantage points for stationary observation in the project area have been agreed with the company employees and international expert. The points are located so as to cover the territory as completely as possible (Fig.1).

The duration of one bird count at each Vantage point (VP) was 3 hours. The total duration of all the observations in the territory was 531 hours.

During observations weather conditions such as wind speed and direction, and air temperature were recorded. Wind speed and air temperature were measured using an anemometer. Whenever possible, the number of species, approximate flight altitude, speed, and flight direction of each target species were recorded every 15 seconds.

During the observations, photographing and short video shooting of birds were carried out, which is used to confirm the correct determination of species and obtain additional data on the number of individuals. Following equipment was used: binoculars (Viking) with 10x zoom; cameras (Nikon P1000, Canon 550D) with 24x and 50x zoom, with focal length of 550 mm and 1200 mm, respectively; field telescope (Viking) with 75x zoom.

Target and Secondary Species

Some species are more sensitive than others from a wind farm risk management standpoint. This is generally because they are classified as highly protected species by national and/or international authorities, because they

are known or suspected to be highly susceptible to wind farm impacts (especially collision with rotors), or both. In addition, some species may be regarded as sensitive due to their cultural or iconic significance, or based on ecological/demographic factors (e.g. slow reproductive rate, naturally low population density). In present, these different criteria have been integrated and considered together to produce a preliminary list of suggested target species for the NBWEP, to be used to prioritize the Project's biological monitoring and mitigation programs, including the biological baseline studies.

Asian Houbara and Houbara Bustard are considered as target species. The main reason is these species are classified as "Vulnerable" by the IUCN, also included on the national redlist for Uzbekistan, and likely occur within the project area, based on a review of records in the eBird database[1].

Pelicans and cranes were not included into target species list. To begin with, water bird collisions with wind turbine rotors is rare, even at wind farms located close to water bodies, indicating low susceptibility of most water birds to collisions with wind turbine rotors. Cranes, as a group, generally exhibit very low susceptibility to collision with wind turbines; and where such risk occurs, it is usually highly concentrated at the water bodies. The minimum distance of this Project's turbines to the Lake (roughly 2-3km) puts the project in a zone of very low risk. To give a more concrete example of this, the IFC's typically recommended setback of turbines from water bodies to minimize water bird collision risk is 500m.

Table 1 below presents a suggested list of sensitive, or "target" bird species for the NBWEP, subdivided into two tiers, reflecting different priority levels (tier 1 is higher sensitivity, higher priority than tier 2).

[1] eBird.org accessed 27 March 2020

Table 1 Target and secondary species

Latin name	English name	IUCN status	Uzbek status[2]	Notes on Likely Occurrence/Risk[3]
		Tier 1 Target Species (top priority)		
Aquila nipalensis	Steppe Eagle	EN	2 (VU:D)	Likely present, though uncommon at site based on nearby, recent eBird records in similar habitat
Aquila chrysaetos	Golden Eagle	LC	listed 2 (VU:R)	Likely present, though uncommon at site based on nearby, recent eBird records in similar habitat
Aquila heliaca	Imperial Eagle	VU	2 (VU:D)	Likely present, though uncommon at site based on nearby, recent eBird records in similar habitat
Neophron percnopterus	Egyptian Vulture	EN	2 (VU:D)	Likely present, though uncommon at site based on nearby, recent eBird records in similar habitat
Chlamydotis macqueenii	Houbara Bustard	VU	2 (V*U:D)	Likely present at site based on numerous recent eBird records nearby and in similar habitat, possibly sensitive to displacement, as well as collision
Vanellus gregarius	Sociable Lapwing	CR	2 (VU:R)	possible rarity, recent eBird photo record in desert habitat ca 75km SW suggests possibility of

[2] Uzbek red data book not accessed directly.

[3] Patterns of regional and seasonal abundance determined from analysis of eBird data (ebird.org) accessed 27 March, 2020

Latin name	English name	IUCN status	Uzbek status[2]	Notes on Likely Occurrence/Risk[3]
				occurrence. Extremely sensitive species with CR status
Tier 2 Target Species (second priority)				
Aegypius monachus	Cinereous Vulture	NT	3 (NT)	Likely present at site based on recent, nearby eBird records, though uncommon in region
Gyps fulvus	Eurasian Griffon	NT	2 (VU:D)	Likely present at site based on recent, nearby eBird records, though uncommon in region
Circaetus gallicus	Short-toed Snake-Eagle	LC	2 (VU:D)	Likely present at site based on recent, nearby eBird records, though uncommon in region
Hieraaetus pennatus	Booted Eagle	LC	2 (VU:D)	Possible rarity, very rare in region
Circus aeruginosus	Eurasian Marsh-Harrier	LC	*not listed*	Fairly common in region
Circus cyaneus	Hen Harrier	LC	*not listed*	Fairly common in region
Circus macrourus	Pallid Harrier	NT	3 (NT)	Fairly common in region
Circus pygargus	Montagu's Harrier	LC	*not listed*	Uncommon in region
Accipiter badius	Shikra	LC	*not listed*	Uncommon in region
Accipiter nisus	Eurasian Sparrowhawk	LC	*not listed*	Uncommon in region

Latin name	English name	IUCN status	Uzbek status[2]	Notes on Likely Occurrence/Risk[3]
Buteo rufinus	Long-legged Buzzard	LC	*not listed*	Fairly common in region
Buteo buteo	Common Buzzard	LC	*not listed*	Fairly common in region
Milvus migrans	Black Kite	LC	*not listed*	Uncommon in region
Anthropoides virgo	Demoiselle Crane	LC	*not listed*	Uncommon in region
Grus grus	Common Crane	LC	*not listed*	Uncommon in region
Falco cherrug	Saker Falcon	EN	1 (NT)	possible. Rarity in region, but eBird records to the east and west indicate possible occurrence
Falco tinnunculus	Common Kestrel	LC	*not listed*	Common in region
Oxyura leucocephala	White-headed Duck	EN	1 (EN)	Possible on Lake Agitma
Anser erythropus	Lesser White-fronted Goose	VU	2 (VU:R)	Possible on Lake Agitma
Branta ruficollis	Red-breasted Goose	VU	2 (VU:R)	Possible on Lake Agitma
Marmaronetta angustirostris	Marbled Teal	VU	1 (EN)	Possible on Lake Agitma
Aythya ferina	Common Pochard	VU	*not listed*	Possible on Lake Agitma
Podiceps auritus	Horned Grebe	VU	*not listed*	Possible on Lake Agitma

Latin name	English name	IUCN status	Uzbek status[2]	Notes on Likely Occurrence/Risk[3]
				I met them south, on Dengizkul Lake in February this year

3. TERRITORY DESCRIPTION

Figure 1. Project area on February 22, 2020 Vantage Point 9. (41.611622° 64.478777°)

The territory intended for the construction of the Zarafshan wind farm is located in the South-Western part of Uzbekistan, in the Navoi region, Tamda district (Fig. 1-2). Aktau mountains located on the northern side of the project area; Azhyrykty village and Tamdy town are in the North-East.

Aktau Mount is included in the list of the Important bird areas - IBA №UZ010 (IBA – Important Birds Areas, the most Important ornithological territories). Mount Aktau is the highest peak in the generally low Tamdytau mountain range in the central part of the Kyzylkum desert. It is at an altitude of 974 m above sea level. Tamdy, the district centre, is situated 6–8 km from the northeastern foothills of the mountain, and a winter livestock herders' camp is located in the western foothills. Zarafshan, a gold-mining centre, is situated 35 km to the west. Mount Aktau has an intricate relief with deep gorges and steep rocky slopes, and it is difficult for people and livestock to access. Bushy and shrubby vegetation is well developed in the gorges, which hold several springs and freshwater pits fed by rainfall. Large birds of prey nest on the practically inaccessible cliffs of the mountain. The IBA covers all of the rocky Aktau massif, with its border following the foot of the mountain[4] (IBA book of Uzbekistan, pages 82-83).

[4] Kashkarov R.D., Welch G.R., and Brombacher M. eds. (2008): Important Bird Areas in Uzbekistan – Priority sites for conservation. Tashkent, Uzbekistan

4. VANTAGE POINTS

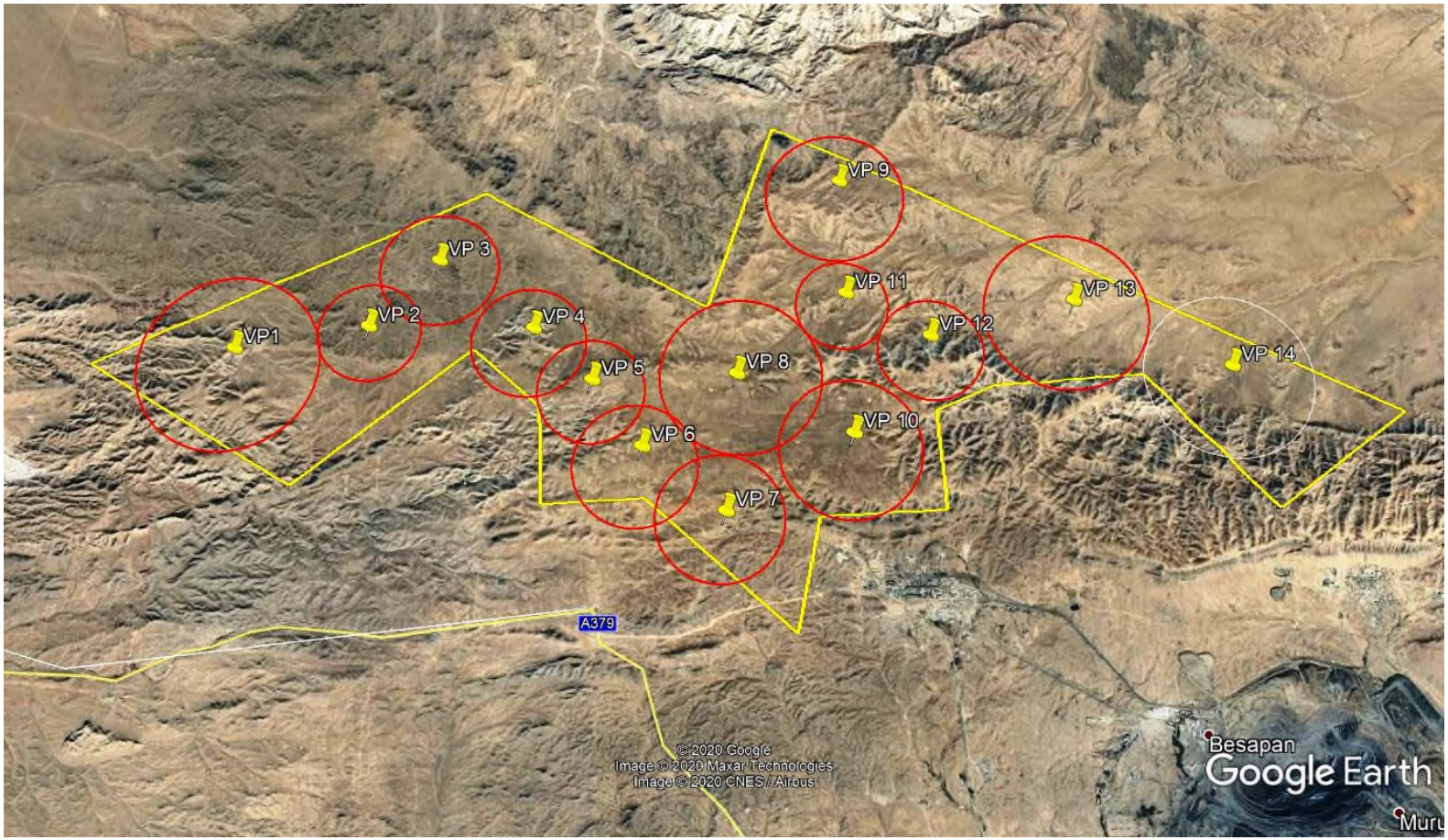

Fig. 2. Vantage Points locations

The number of Vantage Points was agreed with the Client. Points are located so as to cover the project territory as fully as possible (Fig.2). The coordinates of the Vantage Points of Zarafshan WF are shown in Table 2. The radius of a single observation point is 2 km. Time spent at one point is 3 hours' average. The total duration of all the observations in the territory was 531 hours.

Table 2. The coordinates of the VPs of Zarafshan WF and observation time

Vantage Points	Coordinates	Observation time			Total time of observations
		February March	April	May	
VP 1	41.582349° 64.319863°	9	12	15	36
VP 2	41.585587° 64.354108°	9	15	12	36
VP 3	41.598941° 64.372037°	9	18	9	36
VP 4	41.583273° 64.396787°	6	15	15	36
VP 5	41.572261° 64.411438°	9	15	12	36
VP 6	41.558646° 64.423624°	12	18	6	36
VP 7	41.545439° 64.443781°	9	18	9	36
VP 8	41.572008° 64.448397°	6	21	9	36
VP 9	41.611622° 64.478777°	9	15	12	36
VP 10	41.559152° 64.476963°	9	18	9	36
VP 11	41.587621° 64.477994°	6	15	15	36
VP 12	41.577904° 64.498747°	6	24	6	36
VP 13	41.584269° 64.537449°	6	21	9	36
VP 14	41.569329° 64.576066°	3	18	15	36
Total:		**108**	**243**	**153**	**504**

5. BIRD OBSERVATIONS RESULTS

Table 3. Summary table (all the observations in Spring)

SPECIES			VANTAGE POINTS																
№	**Latin**	**English**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP6**	**VP7**	**VP8**	**VP9**	**VP10**	**VP11**	**VP12**	**VP13**	**VP14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle	6	2	2	2	2	4	4	3	1	2	5	8	1	4	EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle	2	3	4	2		2	1			1	2	3		2	LC	2 (VU:R)	**R**
3.	*Aquila heliaca*	Imperial Eagle															VU	2 (VU:D)	**NMS**
4.	*Neophron percnopterus*	Egyptian Vulture	3	1	2		2	5	3	5	1	3	1	5	2	2	EN	2 (VU:D)	**NMW**
5.	*Aegypius monachus*	Cinereous Vulture		2	2	2	1	1	1		3			3			NT	3 (NT)	**R**
6.	*Gyps fulvus*	Eurasian Griffon	3	4		2			2		1	2	4		2	1	NT	2 (VU:D)	**R**
7.	*Hieraaetus pennatus*	Booted Eagle		1				2	4	1	1		1		1		LC	2 (VU:D)	**NM**
8.	*Chlamydotis macqueenii*	Houbara Bustard				1											VU	2 (VU:D)	**NM**
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP1**	**VP2**	**VP3**	**VP4**	**VP5**	**VP6**	**VP7**	**VP8**	**VP9**	**VP10**	**VP11**	**VP12**	**VP13**	**VP14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**

9.	*Circus aeruginosus*	Eurasian Marsh-Harrier	1				1	1					1			1	LC	-	**NMW**
10.	*Circus cyaneus*	Hen Harrier	6	3	1	1	2	4	5	3	3	2	3	2	3	3	LC	-	**MW**
11.	*Accipiter nisus*	Eurasian Sparrowhawk							1		1			2			LC	-	**NMW**
12.	*Buteo rufinus*	Long-legged Buzzard	1	6	2	5	4	2	4	3	2	2	2	5	2	4	LC	-	**NMW**
13.	*Anthropoides virgo*	Demoiselle Crane								153							LC	-	**M**
14.	*Grus grus*	Common Crane		56	150			86		32							LC	-	**MW**
15.	*Falco tinnunculus*	Common Kestrel			5	1					2			2		1	LC	-	**NMW**

Characteristics of bird species identified in the project area:

Aquila nipalensis (Steppe Eagle) According to literature data, it breeds only in the Northern part of the Karakalpak Ustyurt; in other areas it regularly occurs on flights. It inhabits plains and low mountains. Spring migration takes place in March-April, autumn migration-in October-November, and it winters from December to February. On the fly, it is observed singly or in groups of 2-3 individuals; sometimes up to several hundred per day. Nests are on the ground or on rocks. **During our observations, the nests of the Steppe Eagle were not found, but several individuals were regularly recorded.** It feeds on rodents and carrion.

Aquila chrysaetos (Golden Eagle) Nesting, sedentary bird of open landscapes of plains and highlands of Uzbekistan. It lives on sandy massifs and remnants of desert mountains, foothills, rocks of the middle and upper mountain belts up to 2500-3000 m above sea level. Nests are arranged on rocks, loess cliffs, trees, power line supports, towers, graves, etc. They feed on rodents like Long-clawed Ground Squirrel and Large Souslik, and birds like Chukar Partridge, but it is particularly important to note the importance of turtles in the diet of Golden eagles, since almost all nests of Golden eagles have extensive clusters of broken turtle shells. They throw turtles from a height on stones or rocks. **It was regularly observed on carrion along with large carrion birds.**

Neophron percnopterus (Egyptian Vulture) A common relatively numerous nesting bird, confined to depressions in the landscape of the lower belt of all mountain systems and plains of Uzbekistan. It flies away for the winter, only rare individuals winter in Uzbekistan. Well withstands the proximity of humans. Nests are arranged in niches and cavities of rocks, loess and sandstone cliffs, less often on ledges, often can be found not far from the nests of other birds of prey. There is a known case of nesting on the support of a power line pole in an old nest of another predator. The vulture uses ready-made unoccupied nests of other predators, in any case, there is no single observation of vultures self-dragging and laying branches for nests. Vultures usually drag of all sorts of soft materials (wool, rags, ropes, etc.) onto ready-made basis for nest. During the feeding of chicks, the nest niche is cluttered with all sorts of food residues (ungulate bones, skulls of small animals, etc.) and large amount of droppings of the nest owner. A specific, extremely pungent and persistent smell coming from the nest can be felt on the wind for tens and hundreds of meters. The rocks around the nest, and especially under it, are covered with white streaks of droppings, visible from a long distance. Breeding begins in April and ends in the first decade of May. Single, possibly repeated clutches appear before the end of May. There are usually 2 egg in a clutch, less often 1. Nestlings begin to appear in late May and early June, and young birds begin to fly in mid-July and August. According to trophic connections, the vulture is primarily a herpetophage, as well as a collector of the corpses of small animals. Often feeds on large carrion, as well as in dumps in the vicinity of settlements and slaughterhouses.

In addition to observations on the project territory itself, this species often came across on the highway, apparently watching for dead animals on the road.

Aegypius monachus (Cinereous Vulture) Nesting, relatively numerous bird of the mountain systems of Uzbekistan. Nesting is associated with low-mountain and mid-mountain areas. On nomads, during non-breeding time, both adult and immature birds visit almost all plains and mountain areas, avoiding only agricultural land. It feeds on carrion of ungulates, sometimes-foxes, hares, ground squirrels, and turtles. **They are not regularly marked in our accounts.**

Gyps fulvus (Eurasian Griffon) is a nesting sedentary species of the lower and middle belt of all mountain ranges of Uzbekistan. Adults on nomads in non-breeding time, as well as immature individuals appear in all plains and mountain areas, with the exception of large oases. It nests in groups or colonies. Clutches occur in late January-March. There is usually one egg in a clutch, incubation lasts 53 days. Young birds start flying in August. It wanders irregularly. Feeds on carrion of ungulates, visits dumps.

Hieraaetus pennatus (Booted Eagle) The smallest eagle of Uzbekistan avifauna. Booted eagles have two colour morphs – dark and light. At nesting, booted eagles are closely associated with areas of mature high-stemmed forests. During our observations, we met booted eagles in places where there were no large trees. **It could be probably immature flying individuals (not breeding, only spending the summer).**

Buteo rufinus (Long-legged buzzard) is a common, nesting species of all the plains of Uzbekistan, including the Central Kyzylkum. Being one of the background bird species of the plains of Uzbekistan, the Long-legged buzzard is very widespread and occurs in various types of landscape. It is regularly found on flights, nomads and wintering, both in deserts and in oases. In Central Asia, the nominate subspecies Buteo rufinus rufinus is common. A typical nomad species (nomad lifestyle is the lifestyle of an animal whose life cycle takes place in various biotopes.) In Kyzylkum, the Long-legged buzzard is a common nesting bird in years with high and normal rodent numbers; and becomes extremely rare during the depression of their numbers.

The nest of a Long-legged buzzard was found on 28 May with four downy chicks on a rock depression by local shepherds who photographed the nest.

Figure 3. Buzzard Nest on May 28, 2020. 41,522505, 64,430959

Chlamydotis macqueenii (Houbara Bustard)

We have not yet been able to meet Houbara Bustard on the project area. But according to local shepherds, they are sometimes found North-East of the territory, in the valley under Aktau mountain. One of the locals took a photo on his phone of a bird, that could be probably Houbara Bustard. The distance and quality of the image does not allow us to identify the bird species with certainty, but the observer described, that the bird on the photo ran for several tens of meters before it flew, this behaviour is typical for bustards.

Possibly can be Houbara Bustard (near 4 VP)

6. CONCLUSIONS AND RECOMMENDATIONS

Bird observations were conducted on the territory of the planned Zarafshan wind farm to determine the likelihood of birds collision with wind turbines. For this purpose, the bird species were divided into target and secondary species. The target species are birds from the International list of rare and endangered birds and from the Red Book of the Republic of Uzbekistan, and those species that occur regularly in this area were selected as secondary species.

The avifauna of the project territory for the wind farm itself is quite poor, which is quite naturally explained by the extreme aridity and uniformity of the landscape. However, we observed **Egyptian Vulture, Golden Eagle, Steppe Eagle** and sometimes **Eurasian Griffon** and **Booted Eagle** among the target species. Hen Harrier and Long-legged Buzzard from the list of secondary birds of prey were often seen on the territory. But nests of large birds of prey were not found on the project territory. According to literature data, large predators nest mostly on the Northern side of the territory on Aktau Mount, which is considered an IBA - Important Bird Area. According to local shepherds in the past spring months, when there was a mass birth of lambs, large birds of prey often ambushed the flock of sheep in the morning, sometimes attacking the new-born lambs. In May, the lambs became relatively independent and stronger, and it became difficult for the birds to attack them. Most small passerine birds ended nesting in May and started roaming in search of food. This year, the spring was prolonged with frequent cloudy days, rainy and cool evenings. During the observations, it became obvious that from about the middle of April, the species composition of birds and the number of individuals began to decrease. This means that migration ends and the breeding season begins.

The anthropogenic pressure is felt even in such a remote area: people are mainly engaged in cattle breeding, mostly sheep. This in turn negatively affects plants species diversity growing here. Due to lack of food, herds of ungulates often moves from place to place and clutches of birds nesting on the ground is often destroyed.

It is worth recalling the infamous campaign to exterminate birds of prey in the USSR in the 40-50s of the last century. The campaign was held as a fight against harmful predators that harm hunting, fishing and agriculture. It was assumed that the destruction of predators will increase the number and subsequent production of hunting and commercial species. To stimulate shooting, payment amounts were set for the shot birds, and the winners were awarded with prizes - watches, weapons, and large amounts of money. During these years, all birds of prey were mercilessly destroyed, even those that were considered useful in those years. Another negative aspect of this campaign was the involvement of school-age children in it, and its "educational" role for subsequent generations has not yet been outlived. This targeted destruction has led to a sharp reduction in birds of prey. The reduction of scavengers species is also affected by the reduction of wild ungulates. Also, many nests of predators are destroyed in order to get young animals in order to train them for hunting. Pesticides used in agriculture also contribute to reducing the number of predators.

The wind speed on the project territory was 2-10 m/s, several times stronger on high grounds.

Several local farmers were given binoculars and colour albums with photos and names of birds found in the area to involve local people in bird watching.

Recommendations:

1. To continue Bird observations especially during the autumn migration period which will allow us to estimate the intensity of bird flight in this area and give the final conclusion.
2. To obtain data on bird monitoring on the territory of nearby IBA UZ010 Aktau Mount for previous years from local bird conservation organizations. It will help us to see the full picture of bird species distribution and behaviour in the area.

3. ATTACHMENTS

Photos

41.584694°, 64.352189°

Local shepherd's well and yurta 41.599752°, 64.447755°

Well and pond 41.625893°, 64.524612°

Eurasian Griffon 41.599096°, 64.458264°

Yellow ground squirrel (common species and main food of birds of prey in spring and summer) 41.538716°, 64.433027°

41.584028°, 64.323681°

Long-legged Buzzard common species for the area 41.570456°, 64.439311°

03.24.2020. Near VP 9. 41.617992°, 64.491906°

03.24.2020. Near VP 9. 41.616506°, 64.486240°

03.22.2020. 41.579250°, 64.414740°

03/28/2020. 41.588758°, 64.452001°

Eurasian Griffon 03.24.2020. VP 9. 41.611791°, 64.470560°

Golden Eagle 03.25.2020. VP 2. 41.580169°, 64.351865°

Long-legged Buzzard 03.15.2020. VP 8. 41.580812°, 64.447491°

Chukar Partridge 03.21.2020. 41.567134°, 64.573557°

Gazella subgutturosa - Goitered Gazelle, Near VP 3. 03/22/2020.

Note: All photos were taken during the reporting period.

SUMMER QUARTERLY BIRD MONITORING REPORT

Zarafshan Farm Site

Client: WOOD GROUP

This report is prepared by: Juru Energy Date: _____

CHECKED BY _____ Date: _____

APRROVED BY _____ Date: _____

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INTRODUCTION

The Zarafshan Wind Farm Project is being developed by Wood Group. Juru Energy provides local support for ESIA for the Zarafshan Wind Project in Uzbekistan.

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SURVEY METHODS

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The range of detection and identification of large species as golden eagles was up to 2 km, and small passerines 50 m. Directions and flight altitude were taken into account.

The observations were carried out at 14 Vantage points (Table 2). The number and location of Vantage points for stationary observation in the project area have been agreed with the company employees and international expert. The points are located so as to cover the territory as completely as possible (Fig.1).

The duration of one bird count at each Vantage point (VP) was 3 hours. The total duration of all the observations in the territory was **504 hours** (Table 3).

During observations weather conditions such as wind speed and direction, and air temperature were recorded. Wind speed and air temperature were measured using an anemometer. Whenever possible, the number of species, approximate flight altitude, speed, and flight direction of each target species were recorded every 15 seconds.

During the observations, photographing and short video shooting of birds were carried out, which is used to confirm the correct determination of species and obtain additional data on the number of individuals. Following equipment was used: binoculars (Viking) with 10x zoom; cameras (Nikon P1000, Canon 550D) with 24x and 50x zoom, with focal length of 550 mm and 1200 mm, respectively; field telescope (Viking).

Target and Secondary Species

Defining a project-specific subset of sensitive, or “target” species provides a basis for designing a project-specific set of biological monitoring and mitigation programs that is optimally suited for the key wildlife risk issues associated with a wind project. It is important to note that any bird or bat species, if impacted severely enough, can become a significant

risk concern for a wind energy facility. For this reason, any potentially impacted species has a level of sensitivity, warranting a taxonomically comprehensive approach to impact monitoring and adaptive management and mitigation during the operational phase.

Nonetheless, some species are more sensitive than others from a wind farm risk management standpoint. This is generally because they are classified as highly protected species by national and/or international authorities, because they are known or suspected to be highly susceptible to wind farm impacts (especially collision with rotors), or both. In addition, some species may be regarded as sensitive due to their cultural or iconic significance, or based on ecological/demographic factors (e.g. slow reproductive rate, naturally low population density).

In the present section, these different criteria have been integrated and considered together to produce a preliminary list of suggested target species for the ZWEP, to be used to prioritize the Project's biological monitoring and mitigation programs, including the biological baseline studies. Table 1 below presents a suggested list of sensitive, or "target" bird species for the ZWEP, subdivided into two tiers, reflecting different priority levels (tier 1 is higher sensitivity, higher priority than tier 2).

Table 1 Target and secondary species

Latin name	English name	IUCN status	Uzbek status[1]	Notes on Likely Occurrence/Risk[2]
Tier 1 Target Species (top priority)				
Aquila nipalensis	Steppe Eagle	EN	VU	Common migrant
Aquila chrysaetos	Golden Eagle	LC	VU	Nesting in region
Aquila heliaca	Imperial Eagle	VU	VU	Common migrant

[1] Uzbek red data book not accessed directly.

[2] Patterns of regional and seasonal abundance determined from analysis of eBird data (ebird.org) accessed 10 June, 2020

Latin name	English name	IUCN status	Uzbek status[1]	Notes on Likely Occurrence/Risk[2]
Neophron percnopterus	Egyptian Vulture	EN	VU	Nesting in region -on eBird records, present at ZWEP site, confirmed with four separate observations of single individuals during May 2020 VP surveys at three different VP
Falco cherrug	Saker Falcon	EN	EN	Nesting in region
Chlamydotis macqueenii	Houbara Bustard	VU	VU	Nesting in region
Aegypius monachus	Cinereous Vulture	NT	NT	Nesting in region
Gyps fulvus	Eurasian Griffon	NT	VU	Nesting in region
Circaetus gallicus	Short-toed Snake-Eagle	LC	VU	Rare nesting bird in region, present on site
Tier 2 Target Species (second priority)				
Aquila clanga	Greater spotted eagle	VU	VU	Uncommon migrant
Hieraaetus pennatus	Booted Eagle	LC	VU	Very rare in region according to eBird records. Two individuals documented at ZWEP during May 2020 during a VP Survey (VP 4)
Circus aeruginosus	Eurasian Marsh-Harrier	LC	LC	Fairly common in region, several individuals documented at ZWEP during May, 2020 VP surveys
Circus cyaneus	Hen Harrier	LC	LC	Fairly common in region
Circus macrourus	Pallid Harrier	NT	NT	Fairly common in region
Circus pygargus	Montagu's Harrier	LC	LC	Uncommon in region
Accipiter badius	Shikra	LC	LC	Uncommon in region
Accipiter nisus	Eurasian Sparrowhawk	LC	LC	Uncommon in region

Latin name	English name	IUCN status	Uzbek status[1]	Notes on Likely Occurrence/Risk[2]
Buteo rufinus	Long-legged Buzzard	LC	LC	Fairly common in region, documented at ZWEP site in May, 2020
Buteo buteo	Common Buzzard	LC	LC	Fairly common in region
Milvus migrans	Black Kite	LC	LC	Uncommon in region
Anthropoides virgo	Demoiselle Crane	LC	LC	Uncommon in region
Grus grus	Common Crane	LC	LC	Uncommon in region
Otis tarda	Great Bustard	CR	VU	Rare wintering in region
Vanellus gregarius	Sociable Lapwing	CR	VU	Possible rarity, recent eBird photo record in desert habitat ca 60km SE suggests possibility of occurrence. Extremely sensitive species with CR status

TERRITORY DESCRIPTION

The territory intended for the construction of the Zarafshan wind farm is located in the South-Western part of Uzbekistan, in the Navoi region, Tamda district (Fig. 1). Aktau mountains located on the northern side of the project area; Azhyrykty village and Tamdy town are in the North-East.

VANTAGE POINTS

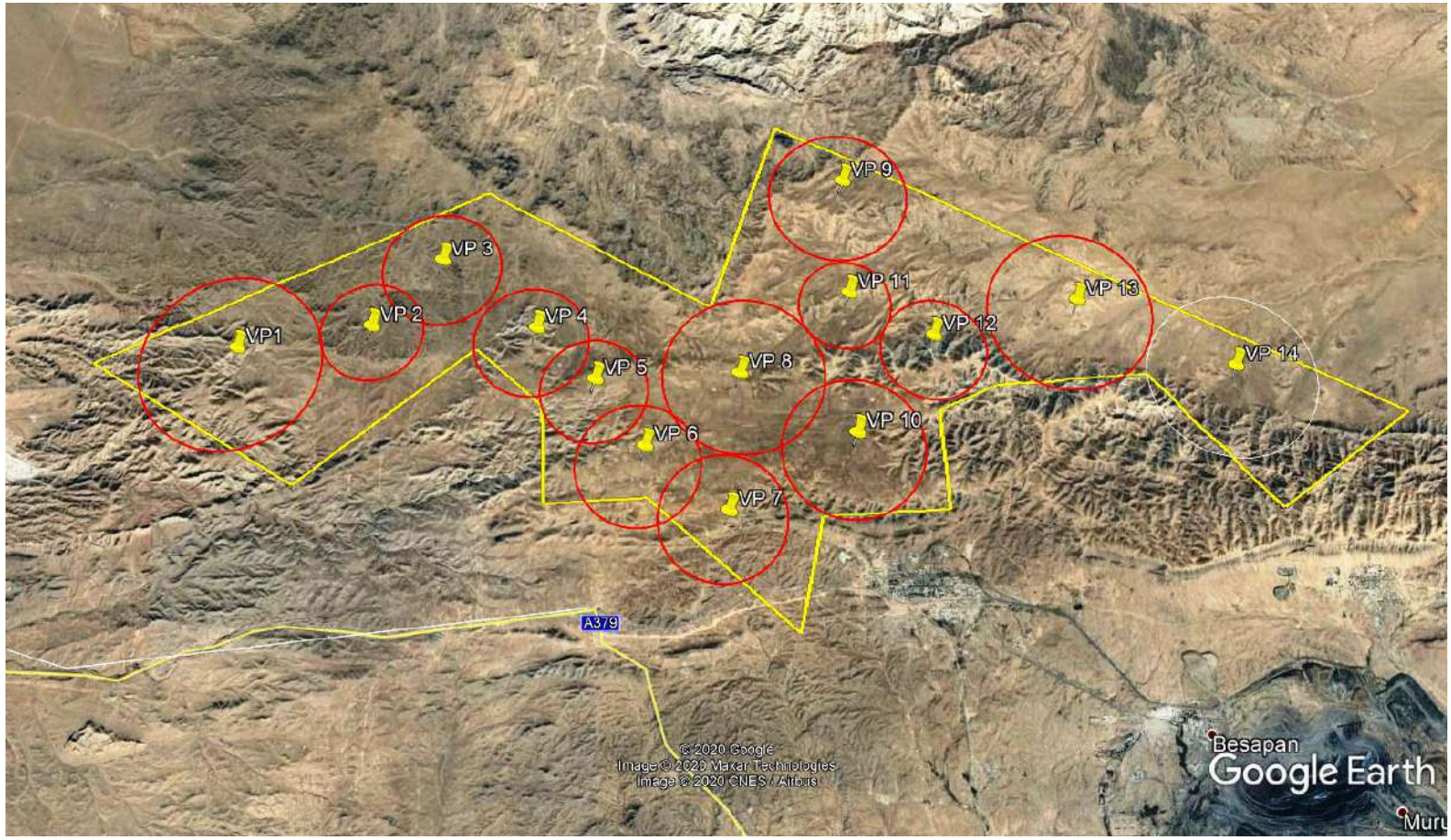

Fig. 1 Vantage Points locations

The number of Vantage Points was agreed with the Client. Points are located so as to cover the project territory as fully as possible. The coordinates of the Vantage Points of Zarafshan are shown in Table 2. The radius of a single observation point is 2 km. Time spent at one point is 3 hours' average.

Table 2 Coordinates of the VPs of Zarafshan project territory

Vantage Points	**Coordinates**
VP 1	41.582349° 64.319863°
VP 2	41.585587° 64.354108°
VP 3	41.598941° 64.372037°
VP 4	41.583273° 64.396787°
VP 5	41.572261° 64.411438°
VP 6	41.558646° 64.423624°
VP 7	41.545439° 64.443781°
VP 8	41.572008° 64.448397°
VP 9	41.611622° 64.478777°
VP 10	41.559152° 64.476963°
VP 11	41.587621° 64.477994°
VP 12	41.577904° 64.498747°
VP 13	41.584269° 64.537449°
VP 14	41.569329° 64.576066°

Table 3 Total Number of VP survey hours

	VP 1	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	
Total hours															
June hr	12	12	18	12	12	18	15	15	15	12	12	12	12	12	
July hr	12	12	12	9	15	15	15	18	15	15	15	15	15	15	
August hr	12	12	6	15	9	3	6	3	6	9	9	9	9	9	
accounts for Summer	36	36	36	36	36	36	36	36	36	36	36	36	36	36	**504**

BIRD OBSERVATIONS RESULTS

Among birds registered during bird survey in from June 01 to August 31, 2020 (Tables 4-7), following bird species belonging to top priority target species were found in the project area: Steppe Eagle (*Aquila nipalensis*), Egyptian Vulture (*Neophron percnopterus*), Cinereous Vulture (*Aegypius monachus),* Eurasian Griffon (*Gyps fulvus*).

Table 4 Results of bird observations in June

SPECIES			VANTAGE POINTS																
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1	*Aquila nipalensis*	Steppe Eagle	**1, 1**	**1**	**1**		**2**	**1, 1**	**1**	**1, 1**		**1, 2**		**1, 2, 1**		**1**	EN	VU	
2	*Aquila chrysaetos*	Golden Eagle															LC	VU	
3	*Aquila heliaca*	Imperial Eagle															VU	VU	
4	*Neophron percnopterus*	Egyptian Vulture	**2**	**2**	**2, 1**	**1, 2, 2**	**1**	**1, 2, 2, 1**			**21**	**2, 2**		**2**	**2, 2, 1**		EN	VU	
5	*Falco cherrug*	Saker Falcon															EN	EN	
6	*Chlamydotis macqueenii*	Houbara Bustard															VU	VU	
7	*Aegypius monachus*	Cinereous Vulture			**1, 1, 1**												NT	NT	

8	*Gyps fulvus*	Eurasian Griffon			**1, 2**						**2**			**1**			NT	VU	
9	*Circaetus gallicus*	Short-toed Snake-Eagle															LC	VU	
SECONDARY AND OTHER SPECIES																			
1.	*Falco naumanni*	Lesser Kestrel						2			1						LC	-	**NM**
2.	*Buteo buteo*	Common Buzzard		2			2				3					1	LC	-	**MW**
3.	*Buteo rufinus*	Long-legged Buzzard	1		1				1		2						LC	-	**NMW**
4.	*Alectoris chukar*	Chuckar partridge	26	24	27	18				14		32		26		19		-	**R**
5.	*Gypaetus barbatus*	Lammergeier			2						1	1		1			**NT**	**2 (VU:R)**	**R**
6.	*Circus cyaneus*	Hen (Northern) Harrier	1						1				2			2	LC	-	**MW**
7.	*Falco tinnunculus*	Common Kestrel	2		2			2	1		1				2		LC	-	**NMW**
8.	*Oenanthe pleschanka*	Pied Wheatear	5	3	3	14	3	4	16	5	4	5	4	6	7	4		-	**NM**
9.	*Oenanthe isabellina*	Isabelline Wheatear	16	15	17	19	16	25	19	15	15	16	27	17	16	14		3 (NT)	**NM**
10.	*Galerida cristata*	Crested Lark	22	34	29	29	30	31	38	32	24	25	15	34	32	24		-	**R**
11.	*Athene noctua*	Little Owl	2		2			2	1			1		1		3		-	**R**
12.	*Upupa epops*	Hoopoe					1					2			1			--	**NMW**

13.	*Pterocles orientalis*	Black-bellied sandgrouse	4		6				6				4			4	LC	-	**NMW**
14.	*Coracias garrulus*	Eurasian Roller		3			2				3			2		2	-	-	**NM**
15.	*Merops supercilios*	Blue-cheeked Bee-eater	11	11		16		14		14		16			48		-		**NM**
16.	*Lanius pallidirostris*	Southern grey shrike	1	2		2			1			1			2		-	-	**NM**
17.	*Hirundo rustica*	Barn swallow	15	12	10	13		15	14		14		14			13	-	-	**NM**
18.	*Rhodospiza obsoleta*	Black-billed Desert Finch	12		5						18		12		11		-	-	**R**
19.	*Acridotheres tristis*	Common myna				6				6						8	-	-	**R**
20.	*Calandrella rufescens*	Lesser Short-toed Lark	36	32	26	28	32	15	19	29	32	34	18	16	27	24	-	-	**NMW**
21.	*Columba livia*	Rock Dove	5		9				9		5					15	-	-	**R**
22.	*Scotocerca inguieta*	Scotocerca inguieta	2	1						1			2				-	-	**R**

Table 5 Results of bird observations in July

SPECIES			VANTAGE POINTS																
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle	**1, 1**		**1**	**2, 2**		**1**	**2, 1, 1**		**1**	**1, 1, 2**		**2, 2**	**1, 1**	**1**			
2.	*Aquila chrysaetos*	Golden Eagle																	
3.	*Aquila heliaca*	Imperial Eagle																	
4.	*Neophron percnopterus*	Egyptian Vulture		**1, 1**	**1**	**2**		**2, 1**	**1, 1**		**1**	**1, 1**		**1, 1**	**2, 1**	**1, 2**			
5.	*Falco cherrug*	Saker Falcon																	
6.	*Chlamydotis macqueenii*	Houbara Bustard																	
7.	*Aegypius monachus*	Cinereous Vulture		**1, 1**	**1**														
8.	*Gyps fulvus*	Eurasian Griffon			**1**						**1, 2, 1**								
9.	*Circaetus gallicus*	Short-toed Snake-Eagle																	
SECONDARY AND OTHER SPECIES																			
1.	*Falco naumanni*	Lesser Kestrel						1			1						LC	3 (NT)	**NM**

2.	*Buteo buteo*	Common Buzzard		1			1				1						LC	-	MW
3.	*Buteo rufinus*	Long-legged Buzzard	2		2				3								LC	-	NMW
4.	*Alectoris chukar*	Chuckar partridge	24	26	32	23						21		23		29	-	-	**R**
5.	*Gypaetus barbatus*	Lammergeier		1							1	1				2	**NT**	**2 (VU:R)**	**R**
6.	*Circus cyaneus*	Hen (Northern) Harrier	1						1				1				LC	-	MW
7.	*Falco tinnunculus*	Common Kestrel	2	1	1			2	1				1		1		LC	-	NMW
8.	*Oenanthe pleschanka*	Pied Wheatear	8	3	4	5	7	8	6	8	5	7	9	6	7	3	-	-	NM
9.	*Oenanthe isabellina*	Isabelline Wheatear	16	17	15	18	17	17	15	15	24	16	15	11	16	12	-	3 (NT)	NM
10.	*Galerida cristata*	Crested Lark	23	31	27	29	32	30	33	26	23	28	17	22	34	18	-	-	R
11.	*Athene noctua*	Little Owl	1	2	1			2	1			1		1		3	-	-	R
12.	*Upupa epops*	Hoopoe	1				1					2			1			-	NMW
13.	*Pterocles orientalis*	Black-bellied sandgrouse	3				7		8			6				5	LC	-	**NMW**
14.	*Coracias garrulus*	Eurasian Roller		3			2				3			2		2	-	-	**NM**

15.	*Merops supercilios*	Blue-cheeked Bee-eater	14	14	8	18	13	17	24	12	11	14	26	17	12	12	-	-	NM
16.	*Lanius pallidirostris*	Southern grey shrike		3	1	3			1		1		1		2	1	-	-	NM
17.	*Hirundo rustica*	Barn swallow	15	12	10	13		15	14		14		14			13	-		NM
18.	*Scotocerca inguieta*	Streaked Scrub Warbler	3	2			4				2				4		-		**R**
19.	*Rhodospiza obsoleta*	Black-billed Desert Finch	14	6	3						16		13			11	-		**R**
20.	*Acridotheres tristis*	Common myna	3		5	5			7							8	-		R
21.	*Calandrella rufescens*	Lesser Short-toed Lark	32	31	21	21	30	16	18	24	22	32	28	26	27	24	-	-	**NMW**
22.	*Columba livia*	Rock Dove	4	2	8				8		4					12	-	-	R
23.	*Apus apus*	Common swift	3	5	3		6		3			5			4		-	-	**V**
24.	*Motacilla personata*	Masked wagtail	2						3							2	-	-	**RMW**

Table 6 Results of bird observations in August

SPECIES			VANTAGE POINTS																
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1	*Aquila nipalensis*	Steppe Eagle	**1**				**1**		**2**		**1**			**1, 2, 1**		**1**			
2	*Aquila chrysaetos*	Golden Eagle																	
3	*Aquila heliaca*	Imperial Eagle																	
4	*Neophron percnopterus*	Egyptian Vulture		**1**	**1**	**2, 2, 1**	**1**				**1**	**1**		**1**		**1**			
5	*Falco cherrug*	Saker Falcon																	
6	*Chlamydotis macqueenii*	Houbara Bustard																	
7	*Aegypius monachus*	Cinereous Vulture				**1**						**1**				**1, 1**			
8	*Gyps fulvus*	Eurasian Griffon		**1**	**1**		**2**		**1**		**2, 2**								
9	*Circaetus gallicus*	Short-toed Snake-Eagle																	
SECONDARY AND OTHER SPECIES																			
1	*Buteo buteo*	Common Buzzard		1			2		1		2					1	LC	-	**MW**

2.	*Buteo rufinus*	Long-legged Buzzard	2		1				1							1	LC	-	**NMW**
3.	*Alectoris chukar*	Chuckar partridge	36	34	37	28				24		33		22		20		-	**R**
4.	*Gypaetus barbatus*	Lammergeier			2			1			1	1		1			**NT**	**2 (VU:R)**	**R**
5.	*Circus cyaneus*	Hen (Northern) Harrier	1						2				1			1	LC	-	**MW**
6.	*Falco tinnunculus*	Common Kestrel	2		2			2	2		1		2		2		LC	-	**NMW**
7.	*Oenanthe pleschanka*	Pied Wheatear	5	5	6	12	5	3	15	4	4	5	4	6	6	3		-	**NM**
8.	*Oenanthe isabellina*	Isabelline Wheatear	16	14	12	17	18	23	18	16	24	11	14	14	15	13		3 (NT)	**NM**
9.	*Galerida cristata*	Crested Lark	25	24	35	25	20	21	27	32	33	28	25	24	32	31		-	**R**
10.	*Athene noctua*	Little Owl			2		1	1	2					2		2		-	**R**
11.	*Pterocles orientalis*	Black-bellied sandgrouse	2		4		2		2					2		4	LC	-	**NMW**
12.	*Coracias garrulus*	Eurasian Roller	1	2			1				2			1		3	-	-	**NM**
13.	*Merops supercilios*	Blue-cheeked Bee-eater	12	10		14		15		18		14			28		-		**NM**
14.	*Lanius pallidirostris*	Southern grey shrike	1	2		1		1	1			1	1		2	1	-	-	**NM**

15.	*Hirundo rustica*	Barn swallow	15	12	10	13		15	14		14		14			13	-	-	**NM**
16.	*Rhodospiza obsoleta*	Black-billed Desert Finch	12		5						18		12		11		-	-	**R**
17.	*Acridotheres tristis*	Common myna	3			5				5						7	-	-	**R**
18.	*Calandrella rufescens*	Lesser Short-toed Lark	36	32	26	28	32	15	19	29	32	34	18	16	27	24	-	-	**NMW**
19.	*Columba livia*	Rock Dove	5		9				9		5					15	-	-	**R**
20.	*Scotocerca inguieta*	Streaked Scrub Warbler	1	2		2		1		1			2				-	-	**R**
21.	*Muscicapa striata*	Spotted flycatcher	1			2		2				1		1		2	-	-	**NM**

SPECIALIZED RAPTOR NEST SURVEY

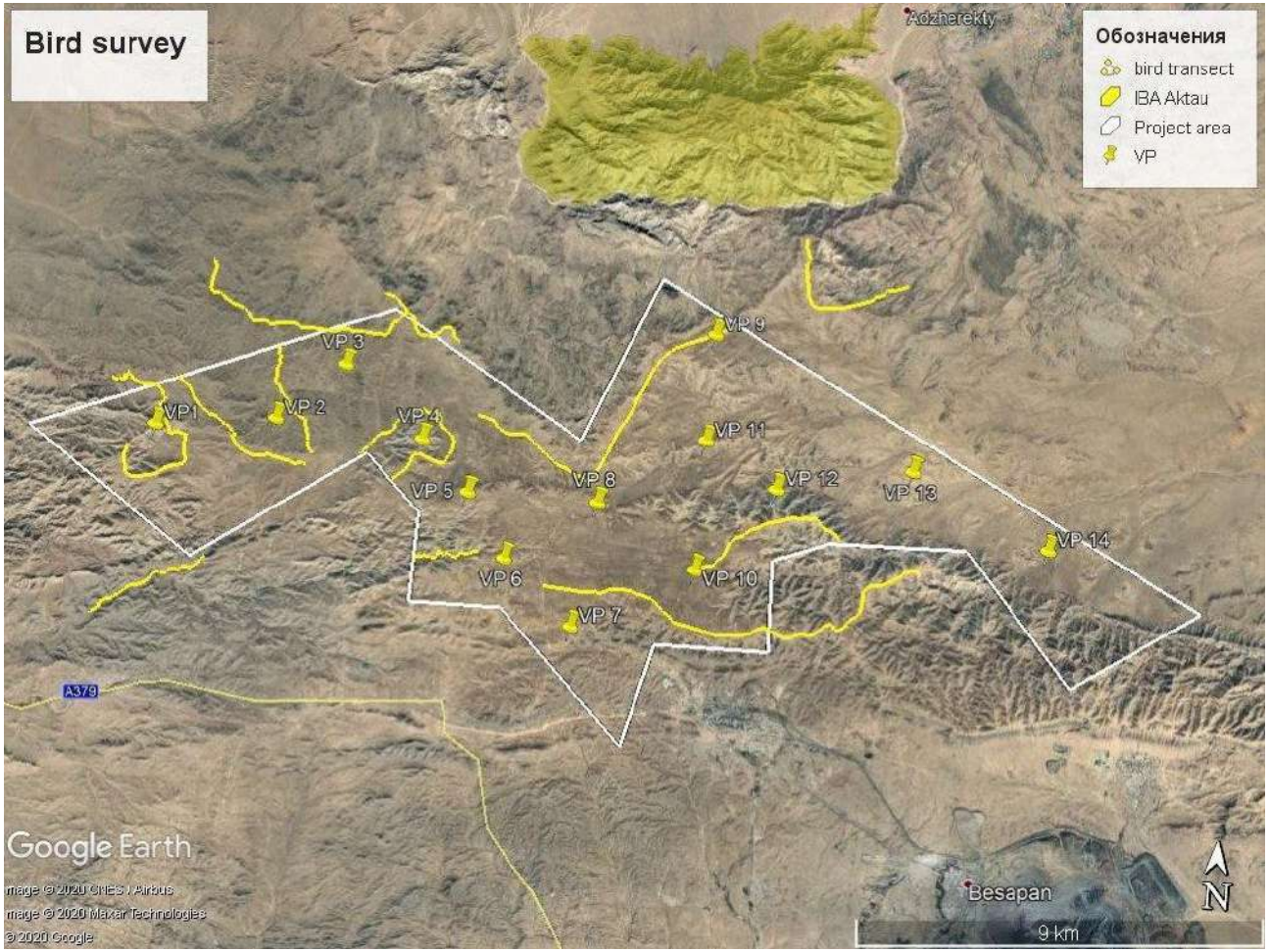

Fig. 2 Raptor nest survey transects

On August 8-12, 2020, the territory of the planned Zarafshan wind farm in Navoi region was surveyed for nesting of large birds of prey. The weather was sunny with no precipitation, windy; air temperature 18-22°C, cool. The destination cliffs were reached by car and then the survey was carried out on foot using binoculars. Depressions, niches and cracks of the rocks were examined. Coordinates were recorded and photos of nests were taken. By the time of the survey, for the majority of raptors breeding period had already ended. Most of the places found were empty or used by birds for recreation or as an observation post. 2 nests were found on the rock depressions, but both of them were already empty (see photos in Attachments). One Kestrel nest we've been observing since spring, and two fledglings were safely raised there.

Typical raptor species for this territory are: Griffon Vulture, Egyptian Vulture, Common Kestrel, Crested Lark, Lesser Short-toed Lark, and Isabelline Wheatear. The list of all the bird species observed during this survey is presented below:

Table 7 List of birds encountered during raptors nests survey on August, 8-12

№	Latin name	English name	Number	IUCN status	Uzbekistan Red Book status	Nature of stay
1.	*Neophron percnopterus*	Egyptian Vulture	3	EN	2 (VU:D)	**NMW**
2.	*Gypaetus barbatus*	Bearded Vulture (Lammergeier)	2	NT	2 (VU:R)	**R**
3.	*Falco tinnunculus*	Common Kestrel	3	LC	-	**NMW**
4.	*Aquila nipalensis*	Steppe Eagle	4	EN	2 (VU:D)	**NMW**
5.	*Gyps fulvus*	Eurasian Griffon	5	NT	2 (VU:D)	**R**
6.	*Hirundo rustica*	Barn Swallow	19	LC	-	**NM**
7.	*Galerida cristata*	Crested Lark	80	LC	-	**R**
8.	*Calandrella rufescens*	Lesser Short-toed Lark	140	LC	-	**NMW**
9.	*Oenanthe isabellina*	Isabelline Wheatear	22	LC	-	**NM**
10.	*Alectoris chukar*	Chukar Partridge	18	LC	-	**R**

Note: *R – residens, W – wintering, M – migrant, N – Nesting, S – Summer visitor*

IBA №UZ010 Aktau Mount SURVEY

Fig. 3 Aktau Mount landscape

Aktau Mount is included in the list of the Important bird areas - IBA №UZ010 (IBA – Important Birds Areas, the most Important ornithological territories). Aktau mountains located on the northern side of the project area.

Mount Aktau is the highest peak in the generally low Tamdytau mountain range in the central part of the Kyzylkum desert. It is at an altitude of 974 m above sea level. Tamdy, the district centre, is situated 6–8 km from the northeastern foothills of the mountain, and a winter livestock herders' camp is located in the western foothills. Zarafshan, a gold-mining centre, is situated 35 km to the west. Mount Aktau has an intricate relief with deep gorges and steep rocky slopes, and it is difficult for people and livestock to access. Bushy and shrubby vegetation is well developed in the gorges, which hold several springs and freshwater pits fed by rainfall. Large birds of prey nest on the practically

inaccessible cliffs of the mountain. The IBA covers all of the rocky Aktau massif, with its border following the foot of the mountain[3] (IBA book of Uzbekistan, pages 82-83).

In August 2020, the Eastern part of the Aktau Mount IBA located north of the Zarafshan project area was surveyed. The purpose of our work was to search for nests of large birds of prey. The weather was sunny with no precipitation, windy; air temperature 18-22°C, cool. 3 ornithologists participated in the survey. The destination was reached by car, and then the survey was carried out on foot. Coordinates were recorded and photos of nests were taken. Depressions, niches and cracks on the rocks and the rocks themselves were examined. During the survey, 6 predator nests were found on the Eastern side of the mountain. During the search, we met a large group of Eurasian Griffon – 34 individuals, Egyptian Vulture – 12 individuals, as well as Lammergeier and Steppe Eagle resting on the rocks.

Typical species for this territory are Griffon Vulture, Egyptian Vulture, Common Kestrel, Crested Lark, Lesser Short-toed Lark, and Isabelline Wheatear.

Table 8 List of birds encountered during raptors nests survey in the Eastern part of the Aktau Mount IBA

№	Latin name	English name	Number	IUCN status	Uzbekistan Red Book status	Nature of stay
1.	*Neophron percnopterus*	Egyptian Vulture	12	EN	2 (VU:D)	**NMW**
2.	*Gypaetus barbatus*	Bearded Vulture (Lammergeier)	2	NT	2 (VU:R)	**R**
3.	*Falco tinnunculus*	Common Kestrel	4	LC	-	**NMW**
4.	*Aquila nipalensis*	Steppe Eagle	4	EN	2 (VU:D)	**NMW**
5.	*Gyps fulvus*	Eurasian Griffon	34	NT	2 (VU:D)	**R**
6.	*Athene noctua*	Little Owl	2	LC	-	**R**
7.	*Hirundo rustica*	Barn Swallow	7	LC	-	**NM**

[3] Kashkarov R.D., Welch G.R., and Brombacher M. eds. (2008): Important Bird Areas in Uzbekistan – Priority sites for conservation. Tashkent, Uzbekistan

8.	*Galerida cristata*	Crested Lark	16	LC	-	**R**
9.	*Calandrella rufescens*	Lesser Short-toed Lark	32	LC	-	**NMW**
10.	*Oenanthe isabellina*	Isabelline Wheatear	6	LC	-	**NM**
11.	*Oenanthe pleschanka*	Pied Wheatear	10	LC	-	**NM**
12.	*Alectoris chukar*	Chukar Partridge	33	LC	-	**R**
13.	*Upupa epops*	Hoopoe	2	LC	-	**R**

Note: *R – residens, W – wintering, M – migrant, N – Nesting, S – Summer visitor*

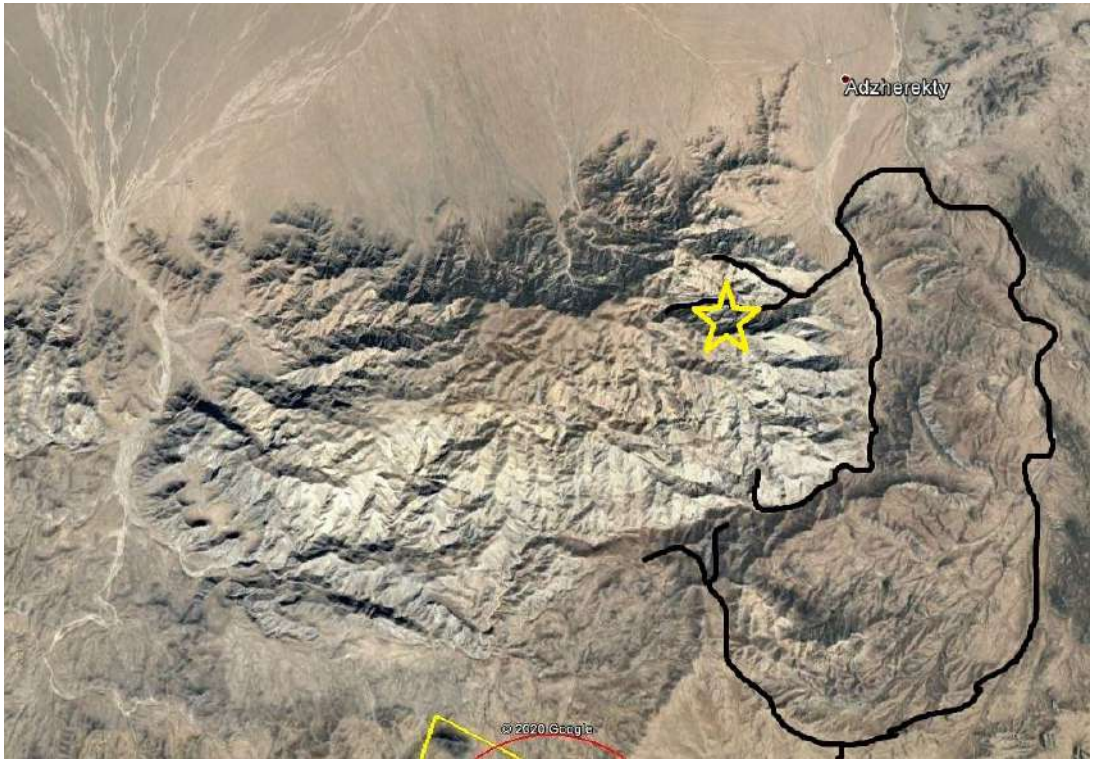

Fig. 4 Survey map. Yellow star – is a colony with six nests

According to the literature data, in the inner part of Aktau mountains, there are many places suitable for building nests, which we could not get to during this trip. And we propose to conduct a survey there in the spring breeding season of 2021.

BATS MONITORING PRELIMINARY REPORT

This preliminary report was made by Denis Vasen'kov Ph. D. from A.N. Severtsov Institute of Ecology and Evolution, Moscow, Russia.

The bat acoustic survey sampling effort is restricted to encompass 7 month warm season, extending from the beginning of April through the end of October, based on a lack of bat activity expected within the region during the colder months. It was proposed to conduct at least 5 complete nights of bat acoustic recording per location using Wildlife Acoustics Songmeter Minibat recorders, encompassing 29 locations spread throughout the Project area. We note that there is only a single species of bat occurring in Uzbekistan with an elevated conservation status according to IUCN, the Giant Noctule (*Nyctalus lasiopterus*, IUCN "Vulnerable"), and this species is unlikely to occur at the ZWEP site, as it is primarily a species of forested habitats, and primarily occurs to the west of the Caspian Sea[4]. Nonetheless, the risk of bat fatalities is typically a concern of international lenders, and bat acoustic surveys are typically recommended for wind-wildlife baseline surveys, as bat fatality rates are typically higher than bird fatality rates at wind energy facilities worldwide. As detectors were first installed only July 30, surveys for bats may need to resume in spring 2021 to fill in the gap in the active season.

[4] IUCN redlist of threatened species, accessed 27 March, 2020

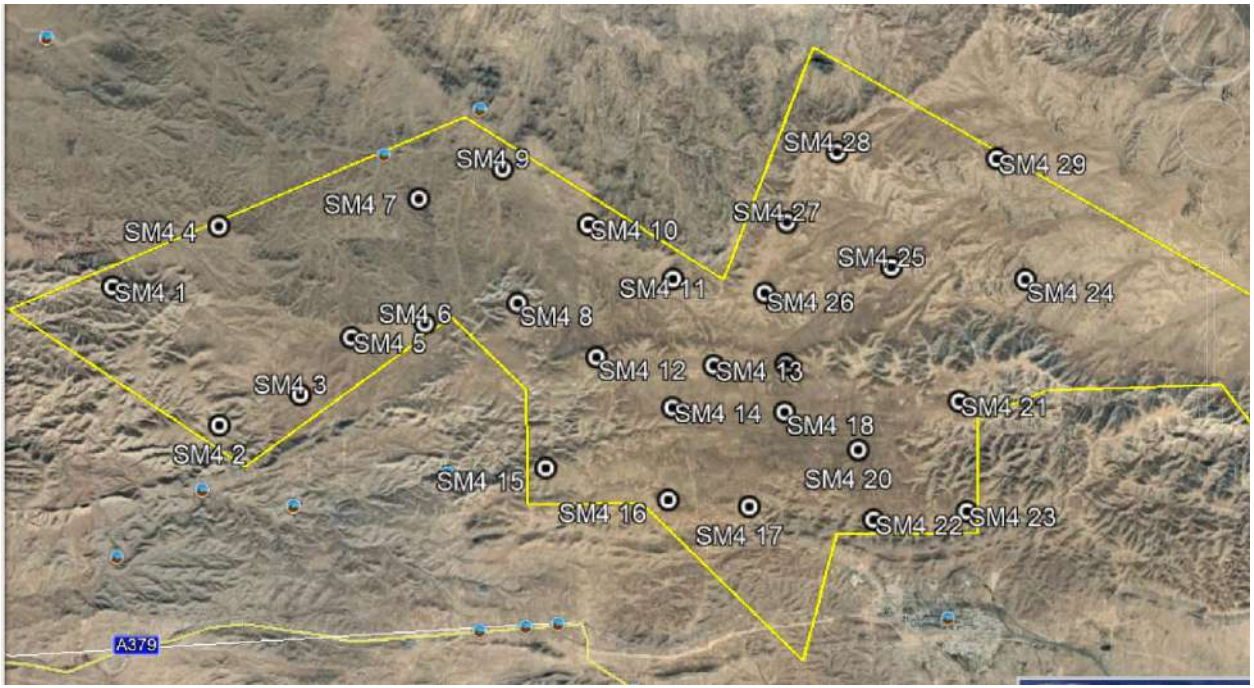

Fig. 5 Static bats detectors locations

Activity of bats has been monitored by two static bat detectors Wildlife Acoustics Song Meter SM4 since July 30 up to September 6. The detectors were moved every five days between locations in accordance with the schedule (Table 9). More than 25766 files were recorded, with a total volume over 135.227 GB. At the moment, all audio materials from local sites have been received and their computer processing has begun.

Table 9 Static bats detectors installation schedule

Location	Coordinates	Start	Finish	Detector (A and B)
1	41.587604° 64.306827°	7/20/2020	7/25/2020	A
5	41.579168° 64.360190°	7/20/2020	7/25/2020	B
8	41.584918° 64.397339°	7/25/2020	7/30/2020	A
9	41.607302° 64.393968°	7/25/2020	7/30/2020	B
13	41.574493° 64.441120°	7/30/2020	8/4/2020	A
17	41.550980° 64.449054°	7/30/2020	8/4/2020	B
20	41.560396° 64.473390°	8/4/2020	8/9/2020	A
21	41.568506° 64.495902°	8/4/2020	8/9/2020	B
26	41.586636° 64.452499°	8/9/2020	8/14/2020	A
29	41.608961° 64.504391°	8/9/2020	8/14/2020	B
1	41.587604° 64.306827°	8/14/2020	8/19/2020	A
5	41.579168° 64.360190°	8/14/2020	8/19/2020	B
8	41.584918° 64.397339°	8/19/2020	8/24/2020	A
9	41.607302° 64.393968°	8/19/2020	8/24/2020	B
13	41.574493° 64.441120°	8/24/2020	8/29/2020	A
17	41.550980° 64.449054°	8/24/2020	8/29/2020	B
20	41.560396° 64.473390°	8/29/2020	9/5/2020	A
21	41.568506° 64.495902°	8/29/2020	9/5/2020	B

According to the literature data on bats of Uzbekistan (Bogdanov, 1953; Benda et al., 2011; Gritsina et al., 2013) and semi-arid ecosystems, 9 species of bats are most likely to inhabit in Zarafshan: *Rhinolophus bocharicus, Eptesicus bottae, Eptesicus gobiensis, Eptesicus serotinus, Hypsugo savii, Myotis davidii, Nyctalus noctula, Pipistrellus pipistrellus, Vespertilio murinus.* Another 11 species known for Uzbekistan and neighboring countries may be found in Zarafshan also (Benda et al., 2011; Benda et al., 2012; Dietz, Kiefer, 2016): *Rhinolophus ferrumequinum, Rhinolophus hipposideros, Plecotus sp. (Gritsina et al., 2013), Myotis bucharensis, Myotis emarginatus, Myotis blythii, Myotis capaccinii, Barbastella caspica, Pipistrellus kuhlii, Otonycteris leucophaea, Tadarida teniotis.*

Some of bat species inhabiting Uzbekistan are found in Europe also, and the parameters of ultrasonic signals are known for the European populations of these species (Barataud, 2015; Dietz, Kiefer, 2016). For some bats of Uzbekistan, the parameters of ultrasonic signals are not known. Determination of these species according ultrasonic signals is a complex process. Perhaps manual identification can help solve this problem. We used the Kaleidoscope Pro Auto Analysis program with "preloaded" parameters of ultrasonic signals from "European" bats found in Uzbekistan for the primary processing of audio recordings. We used the BatSound 4 program to measure the signal parameters more accurately and identify the types of ultrasound calls (Barataud, 2015), which are not available in the Kaleidoscope Pro Auto Analysis database. During the first stage of the analysis, we determined the bats species whose ultrasound calls were recorded.

Signals of 6 bats species were found in the study area. These species are: *Nyctalus noctula*, *Pipistrellus pipistrellus*, *Eptesicus serotinus*, *Hypsugo savii*, *Vespertilio murinus*. Signals of horseshoe bats with Freak (Frequency of maximal energy) = 99.2-101.6 kHz were also detected. This is probably *Rhinolophus bocharicus*. This species is common in Uzbekistan, but absent in Europe, for it the parameters of ultrasonic signals are not known. Ultrasound calls of bats included in the Red Book of the Republic of Uzbekistan were not found (Ўзбекистон …, 2019).

During the second stage of the analysis, the frequency of occurrence of ultrasound calls of different bat species at different Zarafshan sites will be assessed. The solution to this problem will take more time, since manual identification is required.

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CONCLUSIONS

As there are no wind farms in Uzbekistan yet, it is the first bird survey within the context of wind farm project aimed to determine the risk of bird collision with wind turbines. These observations were carried out to address the possible consequences of the construction of a wind farm, such as collisions and/or death from impacts on the blades or turbine structures, and will determine the extent to which these risks can cause significant negative consequences for birds in the immediate vicinity of wind turbines.

The species composition of birds in the Zarafshan WF project area is constantly changing. By the end of summer the majority of birds have already nested and autumn migration begins. The occurrence of large birds of prey in this area is much higher than in other project areas. This is due to the location of Aktau Mountain near the project area, located in the middle of the desert and the low-altitude Kyzylkum Mountains. Mount Aktau is classified as an important bird area (IBA) in Uzbekistan and Central Asia, and is included in the international IBA database. Located near the project area, Aktau Mountain IBA is a resting and nesting place for large birds of prey such as the Eurasian Griffon, Egyptian Vulture, Steppe Eagle, Cinereous Vulture.

Of the 460 bird species found in various regions of Uzbekistan, the majority (more than 85%) are migratory species that fly through the territory of Uzbekistan in spring and autumn, the remaining 10- 5% are permanent residents. The Zarafshan WF project territory is an ecologically important area for sedentary (local) and migratory birds, because the territory is located within one of the main flyways in Central Asia - the Central Asian Flyway.

Bird oservations during the Autumn migration will give the final picture.

Appendix 1. Weather conditions during VP Summer surveys

Table 10 Weather conditions and visibility in June

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 June	sunny, 2-4 m/s	sunny, 5-6 m/s	sunny, 6-8m/s											
2 June				sunny, 3-6 m/s	sunny, 5-6 m/s	sunny, 3-5 m/s								
3 June							sunny, 3-4 m/s			sunny, 6-8 m/s		sunny, 6-8 m/s		
4 June									sunny, 5-7 m/s				sunny, 7-9 m/s	sunny, 6-8 m/s
5 June								sunny, 5-7 m/s	sunny, 8-10 m/s		sunny, 5-6 m/s			
6June						sunny, 4-5m/s	sunny, 5-6 m/s	sunny, 3-4 m/s						
7 June			sunny, 6-8 m/s	sunny, 3-5 m/s	sunny, 2-4 m/s									
11 June	sunny, 6-8 m/s	sunny, 8-10 m/s	sunny, 8-10 m/s											
12 June										sunny, 3-5 m/s	sunny, 2-4 m/s	sunny, 5-7 m/s		

13 June									sunny, 8-10 m/s				sunny, 4-5 m/s	sunny, 8-9 m/s
14 June						sunny, 5-6 m/s	sunny, 3-5 m/s	sunny, 3-5 m/s						
15 June			sunny, 8-10 m/s	sunny, 5-6 m/s	sunny, 6-8 m/s									
16 June	sunny, 2-4 m/s	sunny, 6-8 m/s	sunny, 6-8 m/s											
17 June										sunny, 6-8m/s	sunny, 1-3 m/s	sunny, 6-8 m/s		
21 June									sunny, 9-10 m/s				sunny, 6-8 m/s	sunny, 2-4 m/s
22 June						sunny, 2-4 m/s	sunny, 6-8 m/s	sunny, 6-8 m/s						
23 June				sunny, 6-7 m/s	sunny, 6-8 m/s	sunny, 2-3 m/s								
24 June	sunny, 6-8 m/s	sunny, 3-4 m/s	sunny, 6-8 m/s											
25 June										sunny, 6-8 m/s	sunny, 2-3 m/s	sunny, 8-10 m/s		
26 June									sunny, 6-7 m/s				sunny, 8-9 m/s	sunny, 6-8 m/s

27 June						**sunny, 6-8 m/s**	**sunny, 6-8 m/s**	**sunny, 2-3 m/s**						

Table 11 Weather conditions and visibility in July

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 July												sunny, 4-5 m/s	sunny, 5-6 m/s	sunny, 6-8m/s
2 July									sunny, 3-5 m/s	sunny, 3-6 m/s	sunny, 5-6 m/s			
3 July						sunny, 6-8 m/s	sunny, 3-4 m/s	sunny, 6-8 m/s						
4 July			sunny, 5-7 m/s	sunny, 6-8 m/s	sunny, 7-9 m/s									
5 July	sunny, 5-6 m/s	sunny, 8-10 m/s			sunny, 6-7 m/ s									
6 July												sunny, 4-5 m/s	sunny, 5-6 m/s	sunny, 2-4 m/s
7 July									sunny, 6-8 m/s	sunny, 3-5m/s	sunny, 6-8 m/s			
8 July						sunny, 8-10 m/s	sunny, 6-8 m/s	sunny, 8-10 m/s						
13 July				sunny, 6-8 m/s	sunny, 8-10 m/s			sunny, 5-7 m/s						

14 July	sunny, 3-5 m/s	sunny, 3-5 m/s	sunny, 8-9 m/s											
15 July												sunny, 5-7 m/s	sunny, 6-8 m/s	sunny, 3-5 m/s
16 July									sunny, 6-8 m/s	sunny, 3-5 m/s	sunny, 6-8 m/s			
17 July						sunny, 6-8 m/s	sunny, 1-3 m/s	sunny, 6-8 m/s						
18 July				sunny, 6-8m/s	sunny, 2-4 m/s			sunny, 6-8 m/s						
19 July	sunny, 6-8 m/s	sunny, 2-4 m/s	sunny, 2-4 m/s											
24 July												sunny, 2-3 m/s	sunny, 6-8 m/s	sunny, 6-7 m/s
25 July									sunny, 6-8 m/s	sunny, 6-8 m/s	sunny, 3-4 m/s			
26 July					sunny, 6-8 m/s	sunny, 2-3 m/s	sunny, 5-6 m/s							
27 July	sunny, 6-7 m/s	sunny, 8-9 m/s	sunny, 6-8 m/s											
28 July												sunny, 6-8 m/s	sunny, 6-8 m/s	sunny, 5-6 m/s

29 July									**sunny, 6-8 m/s**	**sunny, 6-8 m/s**	**sunny, 2-3 m/s**			
30 July						**sunny, 4-5 m/s**	**sunny, 6-8 m/s**	**sunny, 2-3 m/s**						

Table 12 Weather conditions and visibility in August

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 August												sunny, 2-5 m/s	sunny, 3-5 m/s	sunny, 4-5m/s
2 August									sunny, 8-9 m/s	sunny, 4-5m/s	sunny, 5-6 m/s			
3 August				sunny, 7-9 m/s	sunny, 6-8 m/s		sunny, 3-4 m/s							
4 August	sunny, 6-8 m/s	sunny, 5-7 m/s		sunny, 5-6 m/s										
5 August												sunny, 5-6 m/s	sunny, 3-4 m/s	sunny, 6-8 m/s
6 August					sunny, 3-5 m/s					sunny, 5-6 m/s	sunny, 3-5 m/s			
7 August	sunny, 10-12 m/s	sunny, 6-8 m/s	sunny, 10-8 m/s											
8 August				sunny, 5-7 m/s	sunny, 3-5 m/s	sunny, 5-6 m/s								
13 August												sunny, 6-8 m/s	sunny, 4-5 m/s	sunny, 8-9 m/s

14 August	**sunny, 3-5 m/s**	**sunny, 5-6 m/s**	**sunny, 5-6 m/s**											
15 August				**sunny, 5-7 m/s**			**sunny, 6-7 m/s**	**sunny, 8-10 m/s**						
16 August									**sunny, 8-10 m/s**	**sunny, 6-8 m/s**	**sunny, 6-8 m/s**			
17 August	**sunny, 6-8 m/s**	**sunny, 6-8 m/s**		**sunny, 2-4 m/s**										

Appendix 2. Vantage Point Data Logs

VP survey results in June

VP. 1

Date: 01.06.2020 Start and end time: 8:36 – 11:36
Weather:
The air temperature around 23-28°C is clear,
Wind speed approx. (2-4 m/s) No precipitation

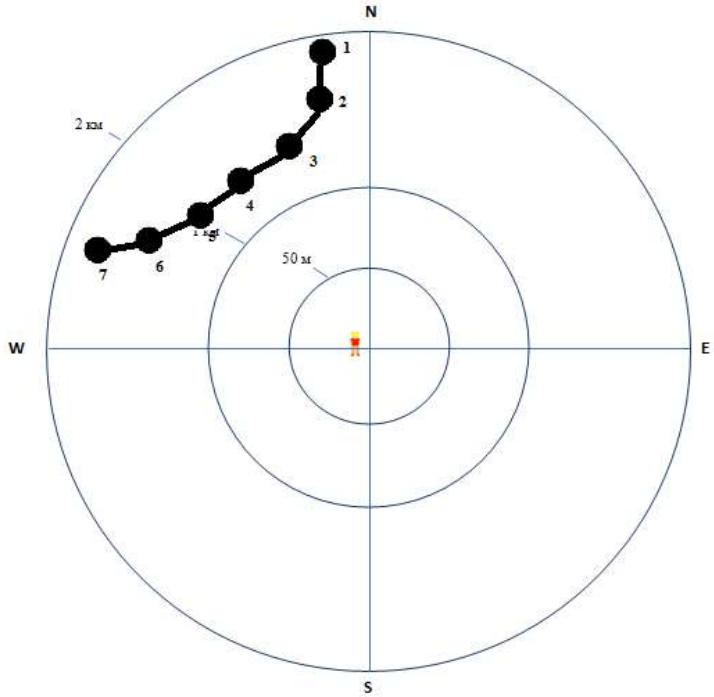


Fig. 6 Flight path (VP 1), 01.06.2020

Table 13 Target species log (VP 1), 01.06.2020

●	*Aquila nipalensis*	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m

VP. 2

Date: 01.06.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature around 28-32°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 3

Date: 01.06.2020 Start and end time: 15:12 – 18:12
Weather: The air temperature around 32-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

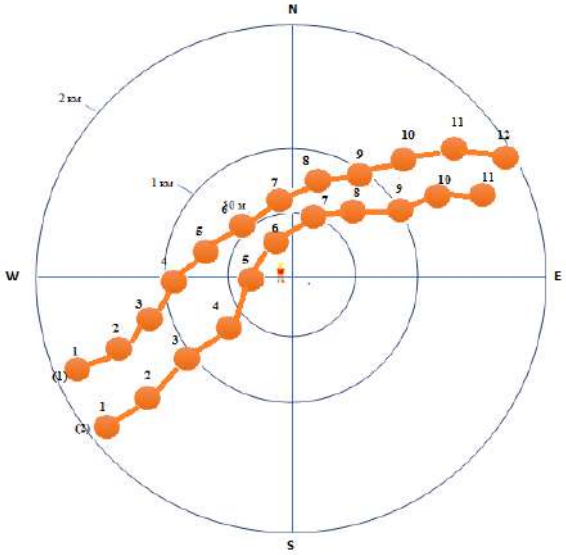


Fig. 7 Flight path (VP 3), 01.06.2020

Table 14 Target species log (VP 3), 01.06.2020

	Neophron percnopterus(1)	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 75 m	11 75 m	12 70 m
	Neophron percnopterus(2)	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 75 m	11 75 m	

VP. 4

Date: 02.06.2020 Start and end time: 7:55 – 10:55
Weather:
The air temperature around 23-25°C is clear.
Wind speed approx. (3-6 m/s) No precipitation

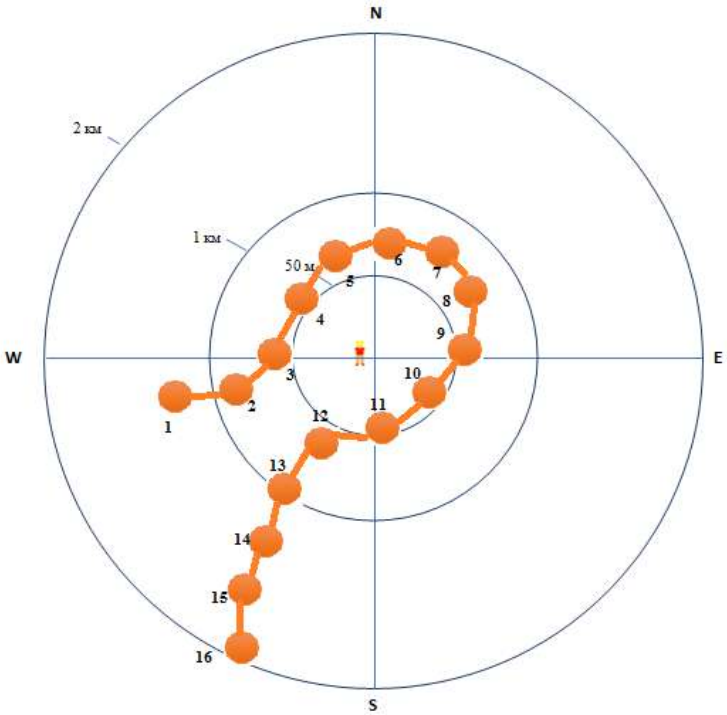


Fig. 8 Flight path (VP 4), 02.06.2020

Table 15 Target species log (VP 4), 02.06.2020

	Neophron percnopterus	1 0 m	2 15 m	3 20 m	4 20 m	5 25 m	6 25 m	7 30 m	8 30 m	9 30 m	10 35 m	11 35 m	12 30 m	13 30 m	14 30 m	15 35 m	16 35 m

VP. 5

Date: 02.06.2020 Start and end time: 12:32 – 15:32
Weather:
The air temperature around 29-32°C is clear, .
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.6

Date: 02.06.2020 Start and end time: 16:03– 19:03
Weather:
The air temperature around 32-28°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

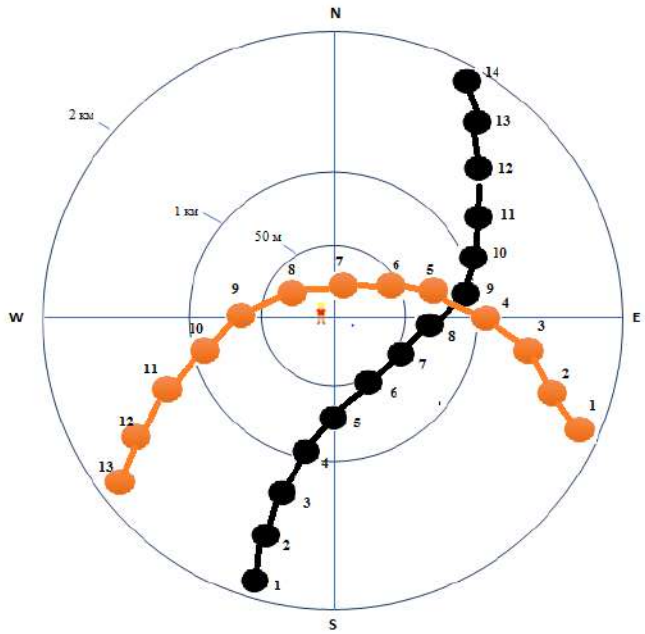


Fig. 9 Flight path (VP 6), 02.06.2020

Table 16 Target species log (VP 6), 02.06.2020

	Aquila nipalensis	1 120 m	2 120 m	3 120 m	4 120 m	5 120 m	6 120 m	7 120 m	8 120 m	9 120 m	10 120 m	11 120 m	12 120 m	13 120 m	14 120 m
	Neophron percnopterus	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 70 m	11 75 m	12 75 m	13 75 m	

VP. 7

Date: 03.06.2020 Start and end time: 7:34 – 10:34
Weather:
The air temperature around 24-26°C is clear.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 10

Date: 03.08.2020 Start and end time: 11:09 – 14:09

Weather:

The air temperature around 28-31°C is clear.

Wind speed approx. (6-8 m/s) No precipitation

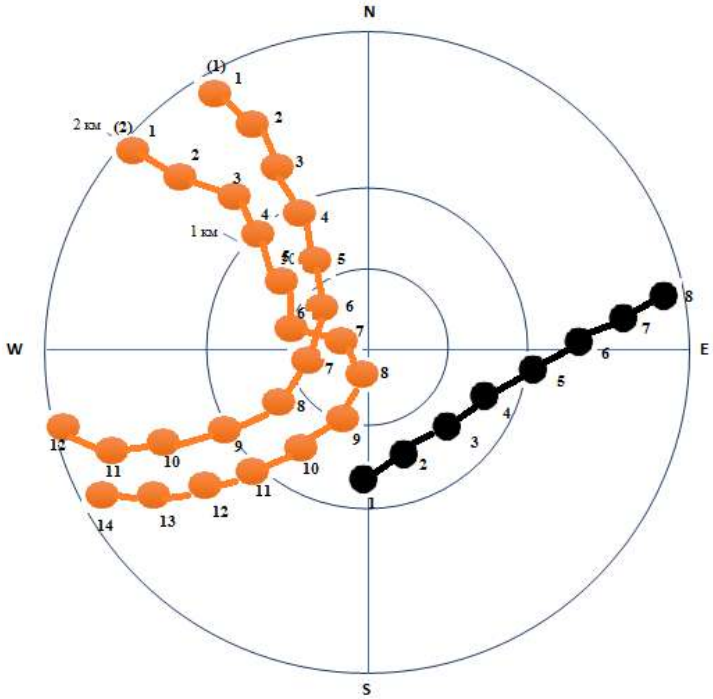


Fig. 10 Flight path (VP 10), 03.06.2020

Table 17 Target species log (VP 10), 03.06.2020

	Neophron percnopterus(1)	1 50m	2 50m	3 50m	4 55m	5 55m	6 50m	7 55m	8 55m	9 50m	10 50m	11 50m	12 50m	13 50m	14 55m
	Neophron percnopterus(2)	1 50m	2 50m	3 50m	4 55m	5 55m	6 50m	7 55m	8 55m	9 50m	10 50m	11 50m	12 50m		
	Aquila nipalensis	1 0m	2 20m	3 20m	4 35m	5 35m	6 40m	7 45m	8 45m						

VP.12

Date: 03.06.2020 Start and end time: 14:46 – 17:46
Weather:
The air temperature around 31-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 13

Date: 04.06.2020 Start and end time: 8:09 – 11:09

Weather:

The air temperature around 22-26°C is clear.

Wind speed approx. (7-9 m/s) No precipitation

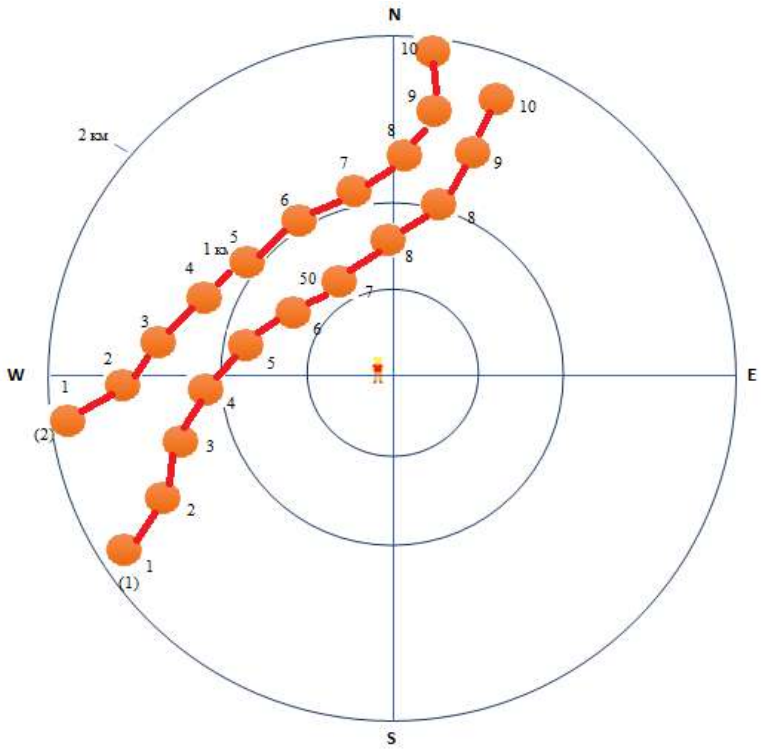


Fig. 11 Flight path (VP 13), 04.06.2020

Table 18 Target species log (VP 13), 04.06.2020

	Neophron percnopterus(1)	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m
	Neophron percnopterus(2)	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m

VP.9

Date: 04.06.2020 Start and end time: 12:00 – 15:00
Weather:
The air temperature around 31-29°C is clear.
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.14

Date: 04.06.2020 Start and end time: 15:16 – 18:16
Weather:
The air temperature around 31-29°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 8

Date: 05.06.2020 Start and end time: 8:35 – 11:35
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (5-7 m/s) No precipitation

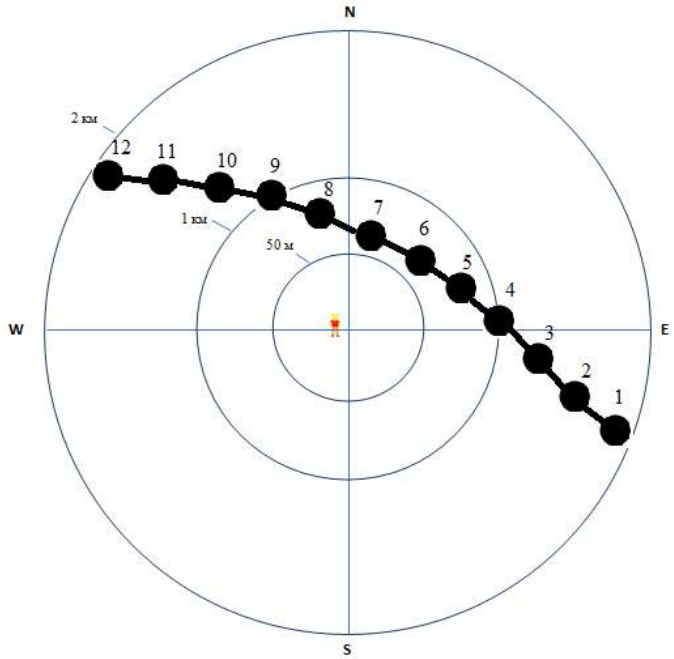


Fig. 12 Flight path (VP 8), 05.06.2020

Table 19 Target species log (VP 8), 05.06.2020

●	*Aquila nipalensis*	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m	11 90 m	12 90 m

VP.11

Date:05.06.2020 Start and end time: 12:16– 15:16
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.9

Date:05.06.2020 Start and end time: 15:48 – 18:53
Weather:
The air temperature around 30-28°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

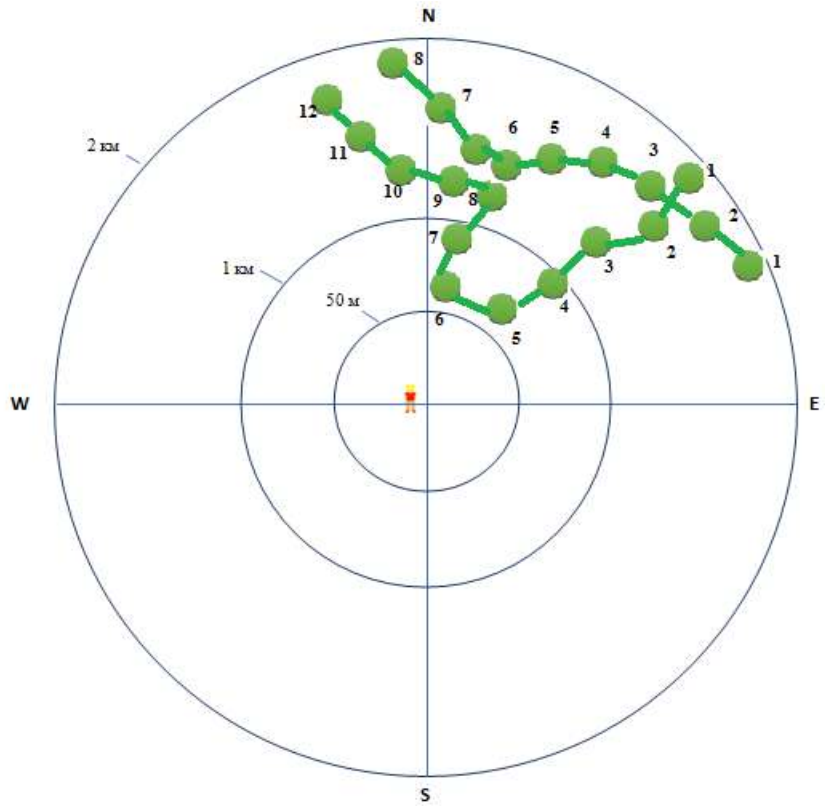


Fig. 13 Flight path (VP 9), 05.06.2020

Table 20 Target species log (VP 9), 05.06.2020

	Gyps fulvus	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m	11 90 m	12 90 m
	Gyps fulvus	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m				

VP. 8

Date:06.06.2020 Start and end time: 7:36 – 10:40
eather:
The air temperature around 24-27°C is clear.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 6

Date: 06.06.2020 Start and end time: 11:16 – 14:16
Weather:
The air temperature around 28-31°C is clear.
Wind speed approx. (4-5 m/s) No precipitation

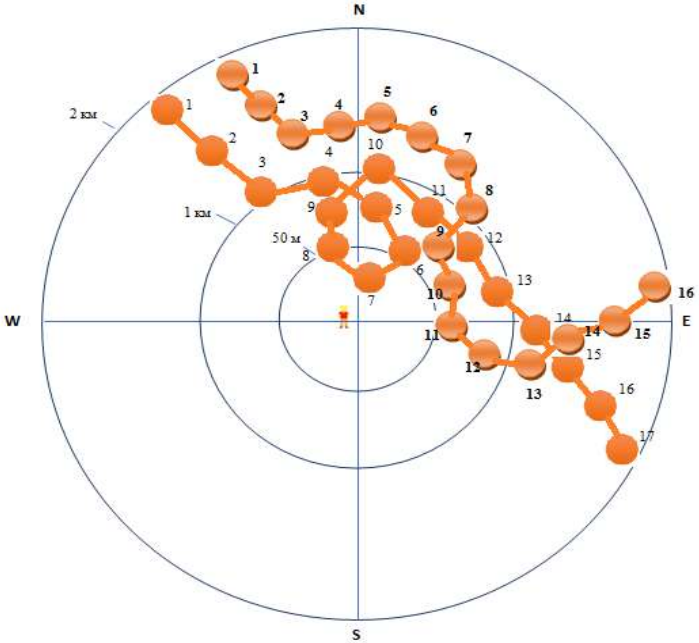


Fig. 14 Flight path (VP 6), 06.06.2020

Table 21 Target species log (VP 6), 06.06.2020

	Neophron percnopterus	1 40 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m	7 45 m	8 45 m	9 40 m	10 40 m	11 40 m	12 45 m	13 45 m	14 40 m	15 45 m	16 40 m	17 45 m
	Neophron percnopterus	1 40 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m	7 45 m	8 45 m	9 40 m	10 40 m	11 40 m	12 45 m	13 45 m	14 40 m	15 45 m	16 40 m	

VP.7

Date: 06.06.2020 Start and end time: 14:42 – 17:42
Weather:
The air temperature around 31-28°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 5

Date: 07.06.2020 Start and end time: 7:46 – 10:46
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 4

Date: 07.06.2020 Start and end time: 11:15 – 14:15
Weather:
The air temperature around 28-31°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

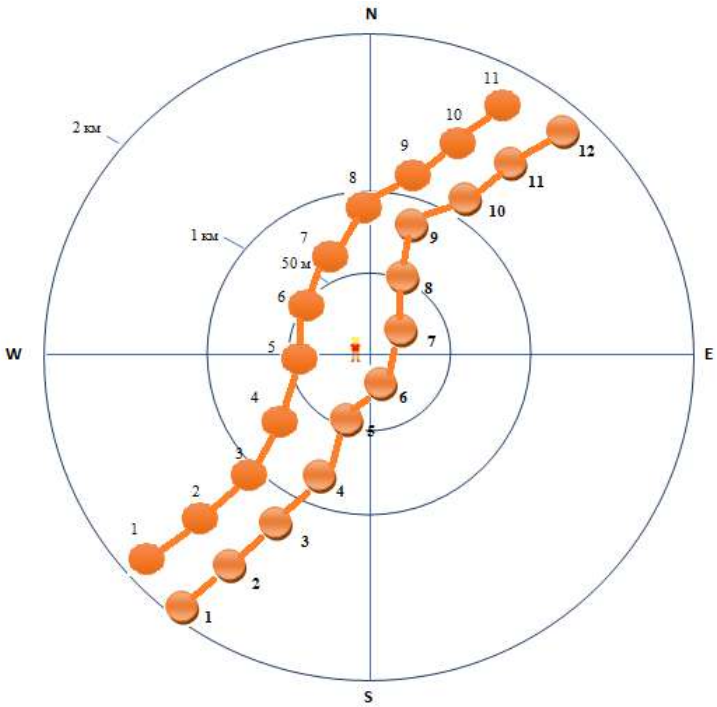


Fig. 15 Flight path (VP 4), 07.06.2020

Table 22 Target species log (VP 4), 07.06.2020

	Neophron percnopterus	1 35 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m	7 45 m	8 45 m	9 40 m	10 40 m	11 40 m	

	Neophron percnopterus	1 35 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m	7 45 m	8 45 m	9 40 m	10 40 m	11 40 m	12 40 m

VP. 3

Date: 07.06.2020. Start and end time: 14:47 – 17:50
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

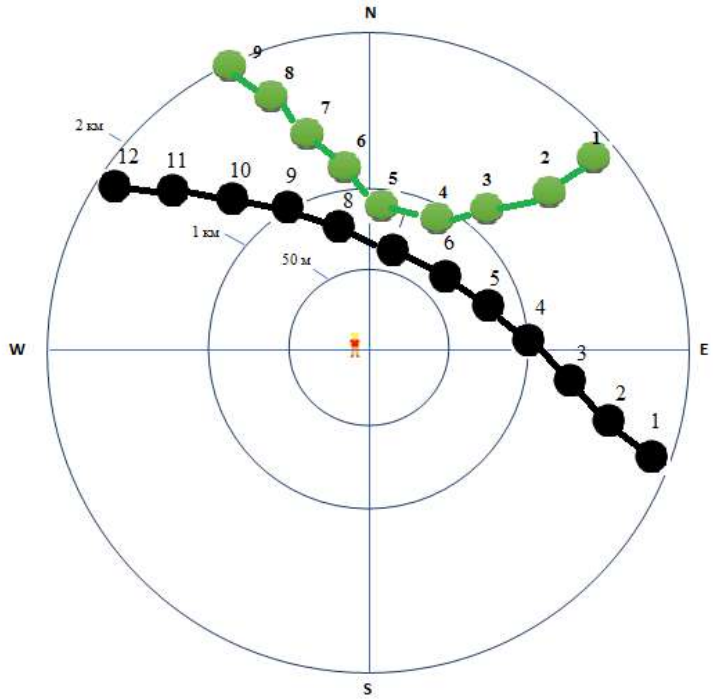


Fig. 16 Flight path (VP 3), 07.06.2020

Table 23 Target species log (VP 3), 07.06.2020

	Aquila nipalensis	1 95 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m	11 90 m	12 90 m
	Gyps fulvus	1 105 m	2 100 m	3 100 m	4 105 m	5 105 m	6 100 m	7 105 m	8 105 m	9 100 m			

VP. 1

Date: 11.06.2020 Start and end time: 8:23 – 11:23
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.2

Date:11.06.2020 Start and end time: 11:56 – 14:56
Weather:
The air temperature around 30-34°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

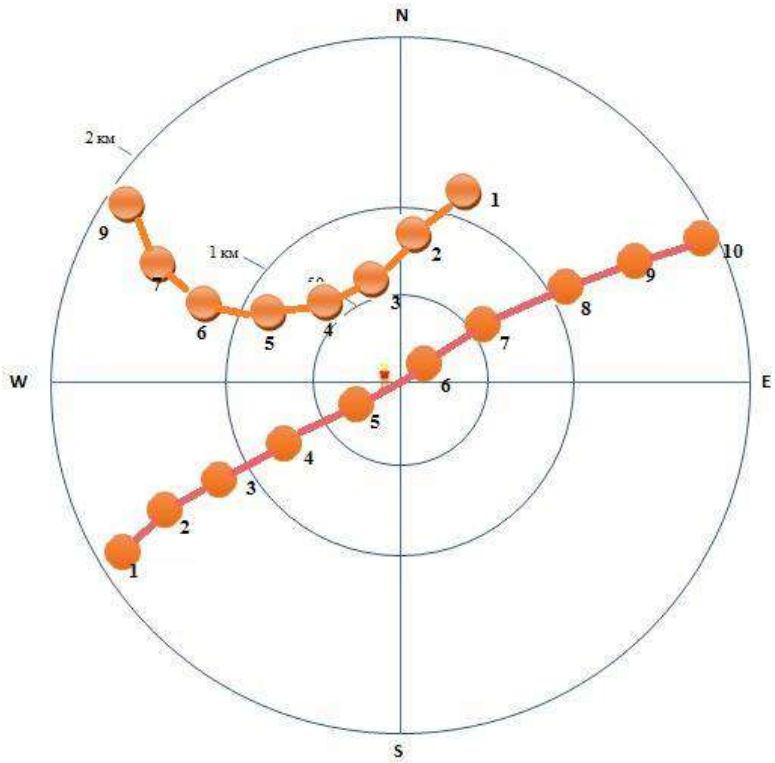


Fig. 17 Flight path (VP 2), 11.06.2020

Table 24 Target species log (VP 2), 11.06.2020

	Neophron percnopterus(1)	1 95 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m
	Neophron percnopterus(2)	1 25 m	2 30 m	3 30 m	4 35 m	5 35 m	6 40 m	7 45 m	8 45 m	9 40 m	

VP.3

Date:11.06.2020 Start and end time: 15:23 – 18:23
Weather:
The air temperature around 31-27°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

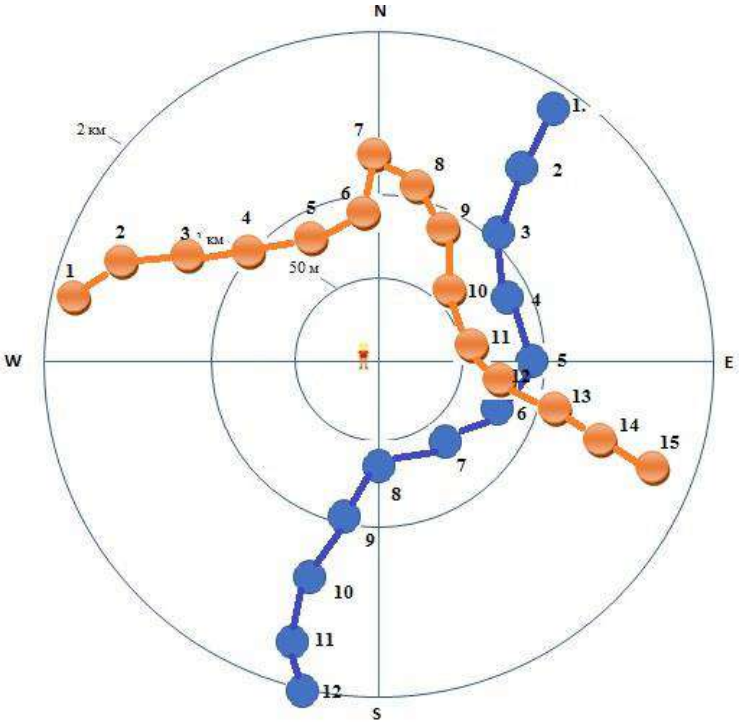


Fig. 18 Flight path (VP 3), 11.06.2020

Table 25 Target species log (VP 3), 11.06.2020

	Aegypius monachus	1 125 m	2 125 m	3 120 m	4 125 m	5 125 m	6 120 m	7 125 m	8 125 m	9 120 m	10 120 m	11 120 m	12 120 m			
	Neophron percnopterus	1 65 m	2 60 m	3 50 m	4 35 m	5 35 m	6 20 m	7 0 m	8 15 m	9 30 m	10 35 m	11 40 m	12 40 m	13 45 m	14 45 m	15 50 m

VP. 10

Date:12.06.2020 Start and end time: 7:46 – 10:46
eather:
The air temperature around 23-27°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 11

Date: 12.06.2020 Start and end time: 11:27 – 14:27
Weather:
The air temperature around 30-34°C is clear.
Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP.12

Date: 12.06.2020 Start and end time: 15:48 – 18:48
Weather:
The air temperature around 34-30°C is clear.
Wind speed approx. (5-7 m/s) No precipitation

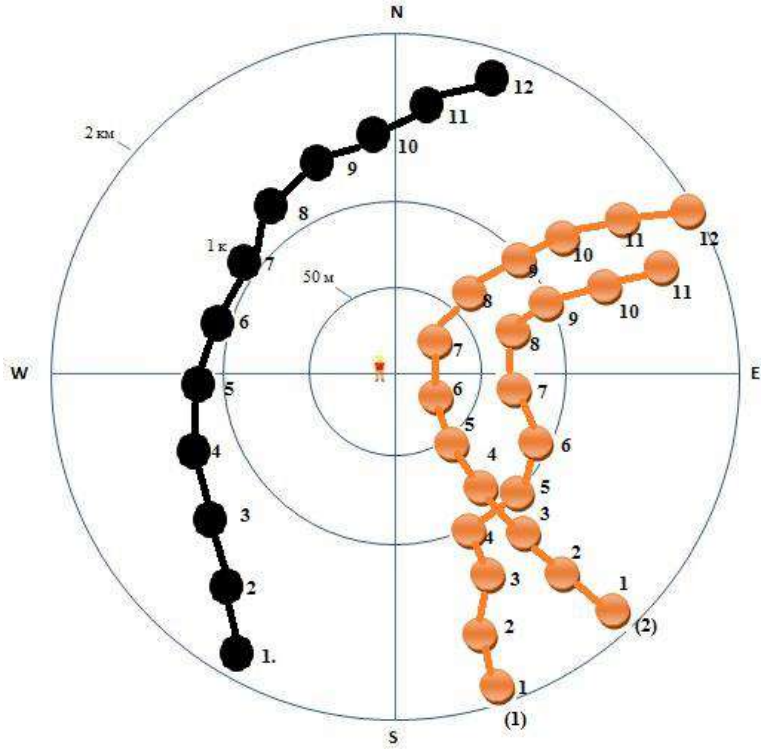


Fig. 19 Flight path (VP 12), 12.06.2020

Table 26 Target species log (VP 12), 12.06.2020

	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 55 m	9 50 m	10 50 m	11 50 m	
	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 55 m	9 50 m	10 50 m	11 50 m	12 55 m
	Aquila nipalensis	1 80 m	2 80 m	3 80 m	4 85 m	5 80 m	6 80 m	7 80 m	8 85 m	9 80 m	10 80 m	11 80 m	12 85 m

VP. 9

Date: 13.06.2020 Start and end time: 8:12 – 11:12
Weather:
The air temperature around 24-29°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

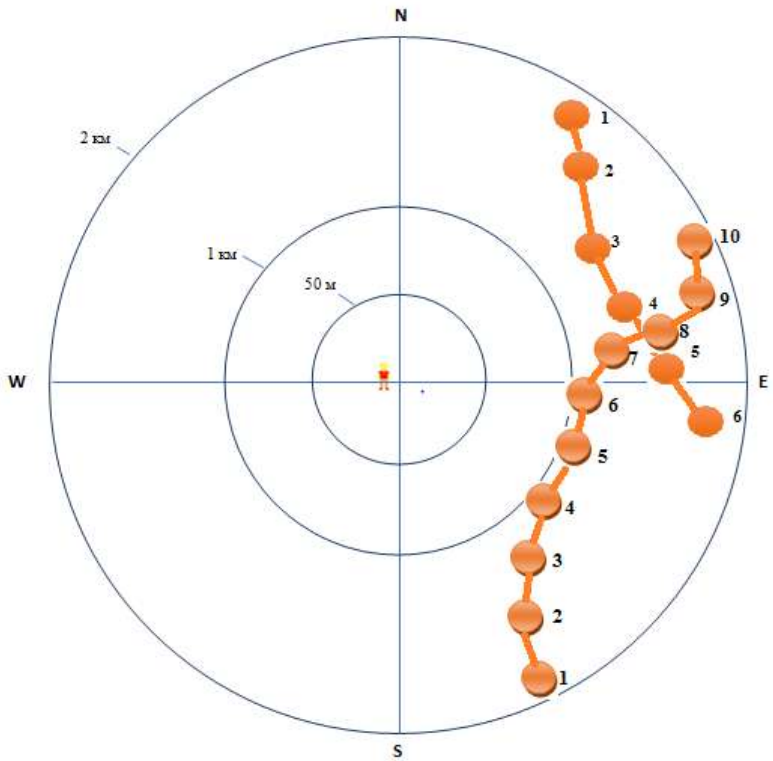


Fig. 20 Flight path (VP 9), 13.06.2020

Table 27 Target species log (VP 9), 13.06.2020

	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 65 m	5 60 m	6 60 m				
	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 55 m	9 50 m	10 50 m

VP. 13

Date: 13.06.2020 Start and end time: 11:47 – 14:47
Weather:
The air temperature around 28-32°C is clear.
Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP. 14

Date: 13.06.2020 Start and end time: 15:10 – 18:10
Weather:
The air temperature around 32-29°C is clear.
Wind speed approx. (8-9 m/s) No precipitation

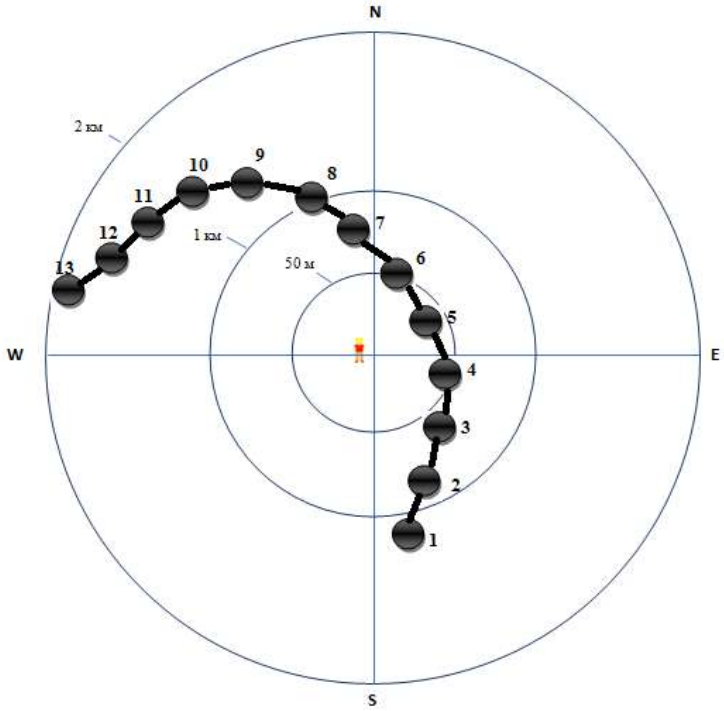


Fig. 21 Flight path (VP 14), 13.06.2020

Table 28 Target species log (VP 14), 13.06.2020

	Aquila nipalensis	1 0 m	2 20 m	3 20 m	4 35 m	5 40 m	6 40 m	7 40 m	8 45 m	9 40 m	10 40 m	11 40 m	12 40 m	13 40 m

VP. 7

Date: 14.06.2020 Start and end time: 7:23 – 10:23
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 6

Date: 14.06.2020 Start and end time: 10:56 – 13: 56
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

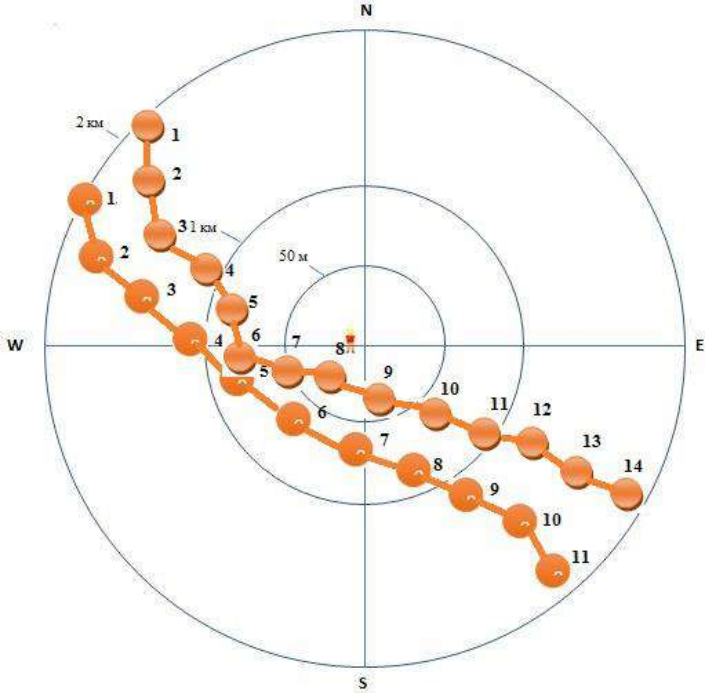


Fig.. Flight path (VP 6), 14.06.2020

Table 29 Target species log (VP 6), 14.06.2020

	Neophron percnopterus	1 40 m	2 30 m	3 20 m	4 20 m	5 20 m	6 20 m	7 35 m	8 35 m	9 40 m	10 40m	11 40 m	12 40 m	13 40 m	14 40 m
	Neophron percnopterus	1 40 m	2 40 m	3 40 m	4 35 m	5 25 m	6 20 m	7 25m	8 35 m	9 30 m	10 40 m	11 40 m			

VP. 8

Date: 14.06.2020 Start and end time: 14:22 – 17:22
Weather:
The air temperature around 32-28°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

Primary species not found

VP. 5

Date: 15.06.2020 Start and end time: 7:26 – 10:26
Weather:
The air temperature around 24-29°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.4

Date:15.06.2020 Start and end time: 10:57 – 13:57
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

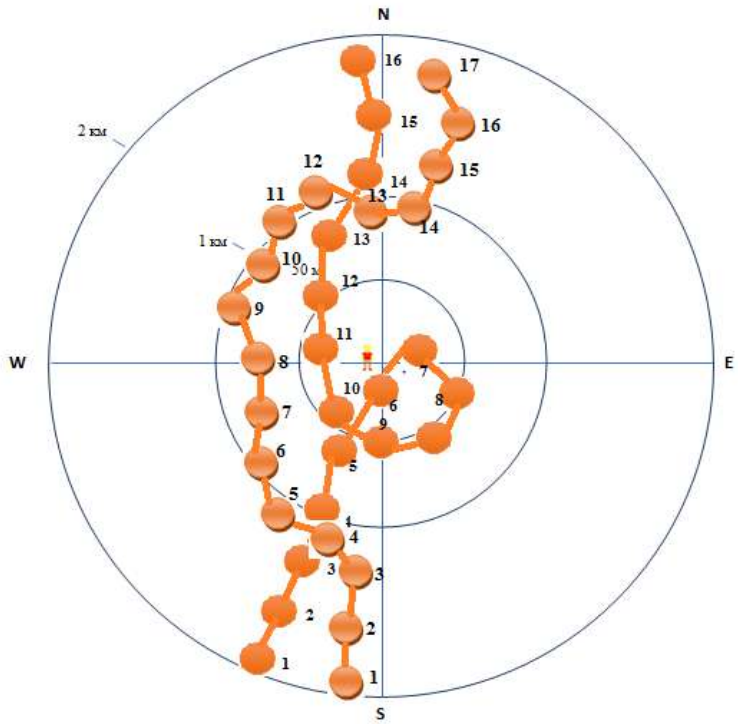


Fig. 22 Flight path (VP 4), 15.06.2020

Table 30 Target species log (VP 4), 15.06.2020

	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 60 m	5 60 m	6 60 m	7 55 m	8 55 m	9 50 m	10 50m	11 50 m	12 50 m	13 50 m	14 50 m	15 50 m	16 50 m	17 55 m
	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 60 m	5 60 m	6 60 m	7 55 m	8 55 m	9 50 m	10 50m	11 50 m	12 50 m	13 50 m	14 50 m	15 50 m	16 50 m	

VP 3

Date:15.06.2020 Start and end time: 14:26 – 17:26
Weather:
The air temperature around 32-27°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

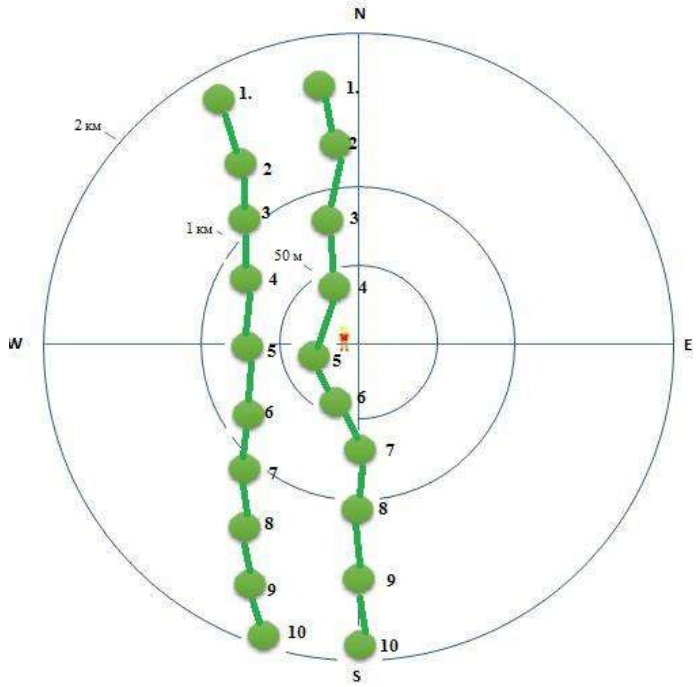


Fig. 23 Flight path (VP 3), 15.06.2020

Table 31 Target species log (VP 3), 15.06.2020

	Gyps fulvus	1 90 m	2 90 m	3 90 m	4 90 m	5 90 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90m
	Gyps fulvus	1 90 m	2 95 m	3 90 m	4 90 m	5 90 m	6 95 m	7 95 m	8 95 m	9 90 m	10 95m

VP. 1

Date:16.06.2020 Start and end time: 7:46 – 10:46
eather:
The air temperature around 24-27°C is clear.
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP. 2

Date: 16.06.2020 Start and end time: 11:12 – 14:12
Weather:
The air temperature around 29-34°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

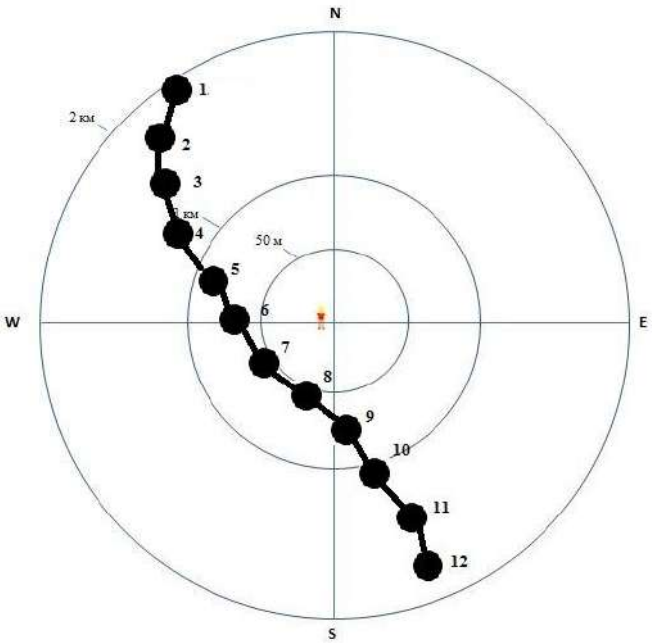


Fig. 24 Flight path (VP 2), 16.06.2020

Table 32 Target species log (VP 2), 16.06.2020

	Aquila nipalensis	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 50 m	9 50 m	10 55 m	11 55 m	12 50 m

VP. 3

Date:16.06.2020 Start and end time: 14:53 – 17:53
Weather:
The air temperature around 34-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

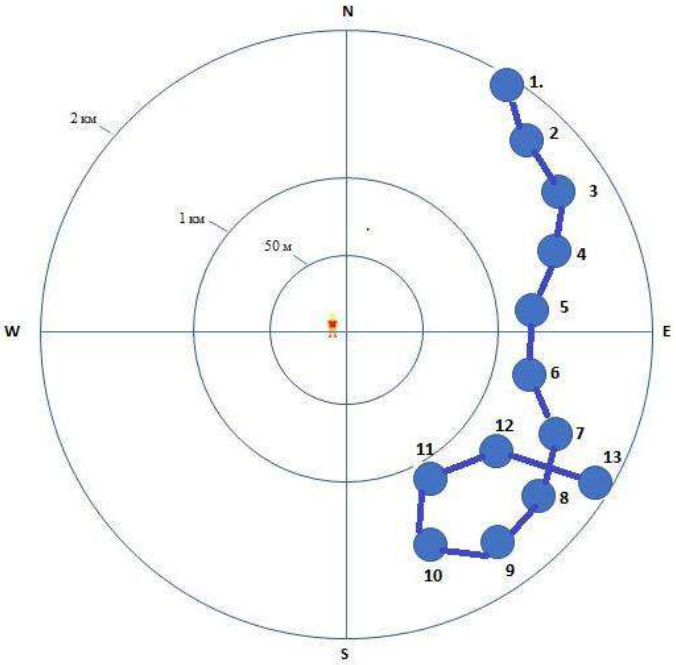


Fig. 25 Flight path (VP 3), 16.06.2020

Table 33 Target species log (VP 3), 16.06.2020

	Aegypius monachus	1 90 m	2 90 m	3 95 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 90 m	13 90 m

VP. 10

Date: 17.06.2020 Start and end time: 8:12 – 11:12
Weather:
The air temperature around 24-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

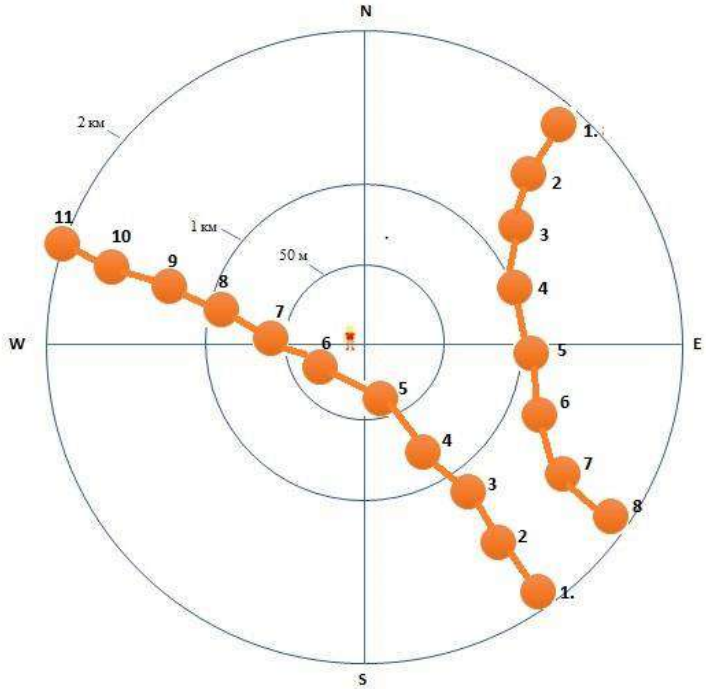


Fig. 26 Flight path (VP 10), 17.06.2020

Table 34 Target species log (VP 10), 17.06.2020

	Neophron percnopterus	1 70 m	2 70 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m	10 75 m	11 75 m
	Neophron percnopterus	1 70 m	2 70 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m			

VP. 11

Date:17.06.2020 Start and end time: 11:48 – 14:48
eather:
The air temperature around 32-34°C is clear.
Wind speed approx. (1-3 m/s) No precipitation
Primary species not found

VP.12

Date: 17.06.2020 Start and end time: 15:15 – 18:15
Weather:
The air temperature around 34-32°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

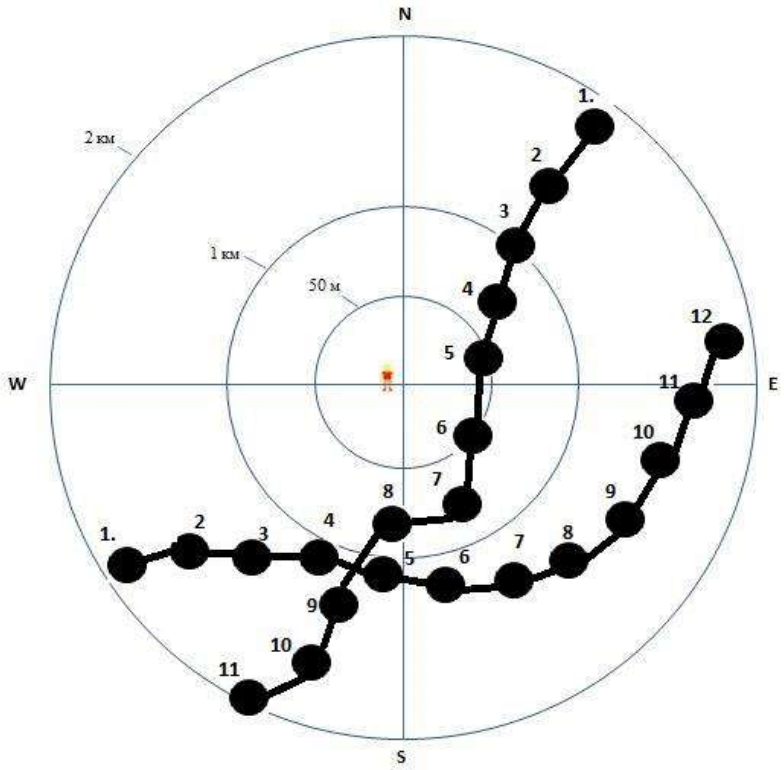


Fig. 27 Flight path (VP 12), 17.06.2020

Table 35 Target species log (VP 12), 17.06.2020

	Aquila nipalensis	1 80 m	2 80 m	3 80 m	4 85 m	5 80 m	6 80 m	7 80 m	8 80 m	9 80 m	10 85 m	11 80 m	12 80 m
	Aquila nipalensis	1 80 m	2 80 m	3 80 m	4 85 m	5 80 m	6 80 m	7 80 m	8 80 m	9 80 m	10 85 m	11 80 m	

VP. 14

Date:21.06.2020 Start and end time: 7:46 – 10:46

Weather

The air temperature around 24-29°C is clear.

Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 13

Date: 21.06.2020 Start and end time: 11:18 – 14:18

Weather:

The air temperature around 29-34°C is clear.

Wind speed approx. (6-8 m/s) No precipitation

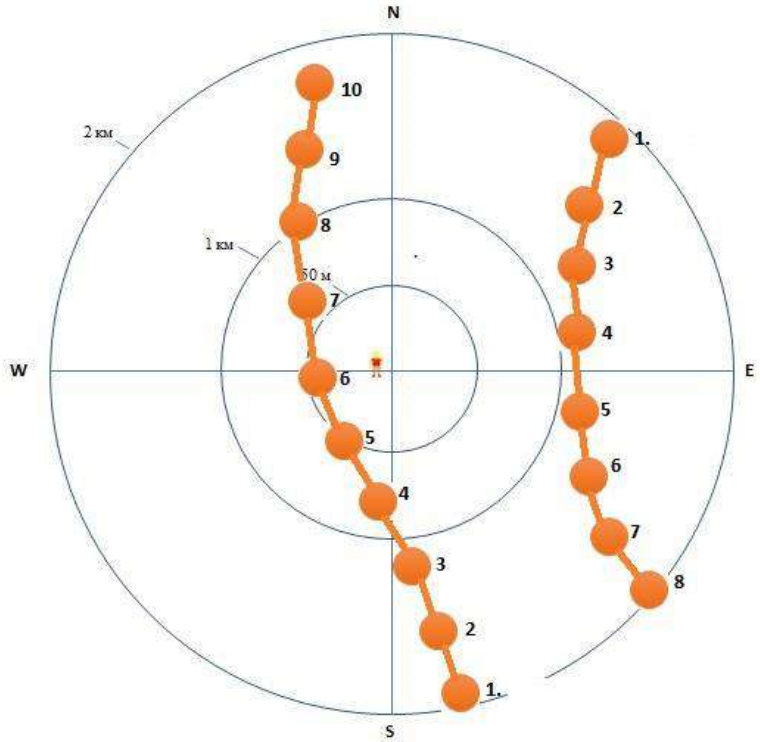


Fig. 28 Flight path (VP 13), 21.06.2020

Table 36 Target species log (VP 13), 21.06.2020

	Neophron percnopterus	1 110 m	2 110 m	3 110 m	4 115 m	5 110 m	6 110 m	7 110 m	8 110 m	9 110 m	10 115 m
	Neophron percnopterus	1 110 m	2 110 m	3 110 m	4 115 m	5 110 m	6 110 m	7 110 m	8 110 m		

VP. 9

Date:21.06.2020 Start and end time: 15:26 – 18:26
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (9-10 m/s) No precipitation
Primary species not found

VP. 7

Date: 22.06.2020 Start and end time: 8:02 – 11:02
Weather:
The air temperature around 29-34°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

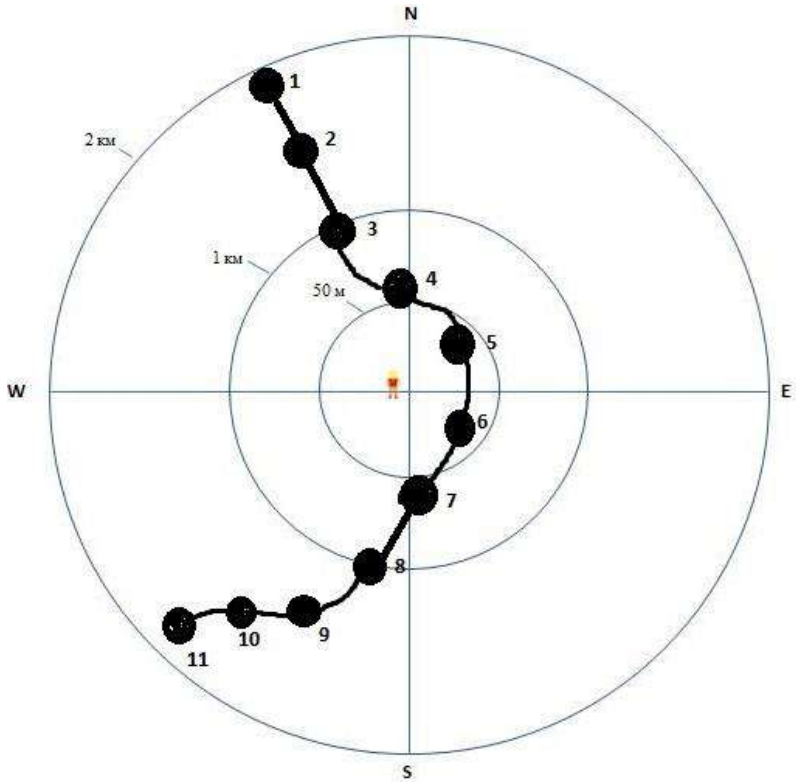


Fig. 29 Flight path (VP 7), 22.06.2020

Table 37 Target species log (VP 7), 22.06.2020

●	*Aquila nipalensis*	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m	10 75 m	11 75 m

VP. 6

Date:22.06.2020 Start and end time: 11:38 – 14:38
Weather:
The air temperature around 24-27°C is clear.
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP.8

Date: 22.06.2020 Start and end time: 15:12 – 18:12
Weather:
The air temperature around 33-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

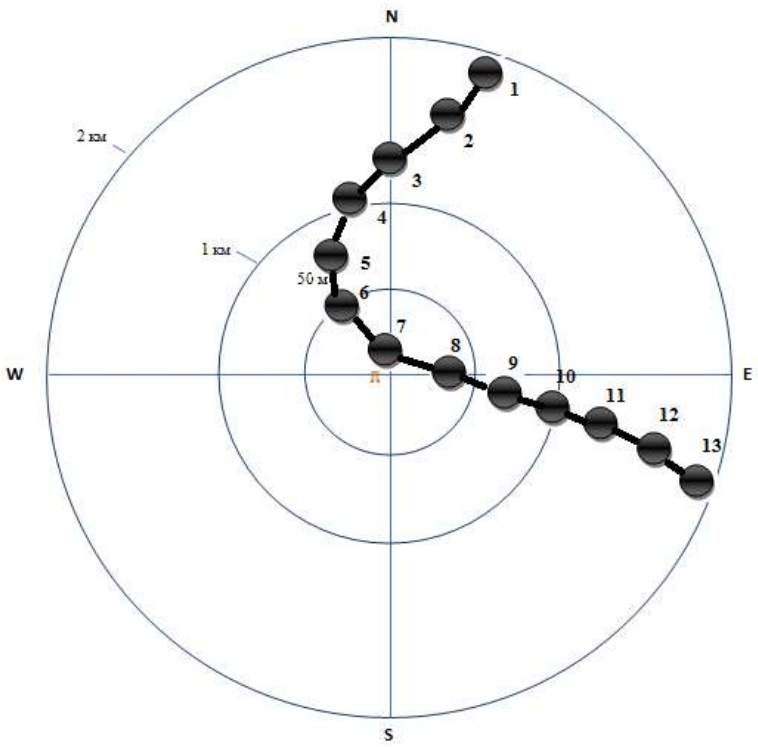


Fig. 30 Flight path (VP 8), 22.06.2020

Table 38 Target species log (VP 8), 22.06.2020

●	*Aquila nipalensis*	1 150 m	2 150 m	3 150 m	4 155 m	5 150 m	6 150 m	7 150 m	8 150 m	9 150 m	10 155 m	11 150 m	12 150 m	13 150 m

VP.6

Date: 23.06.2020 Start and end time: 7:15 – 10:15
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 5

Date: 23.06.2020 Start and end time: 10:46 – 13:46

Weather:

The air temperature around 29-32°C is clear.

Wind speed approx. (6-8 m/s) No precipitation

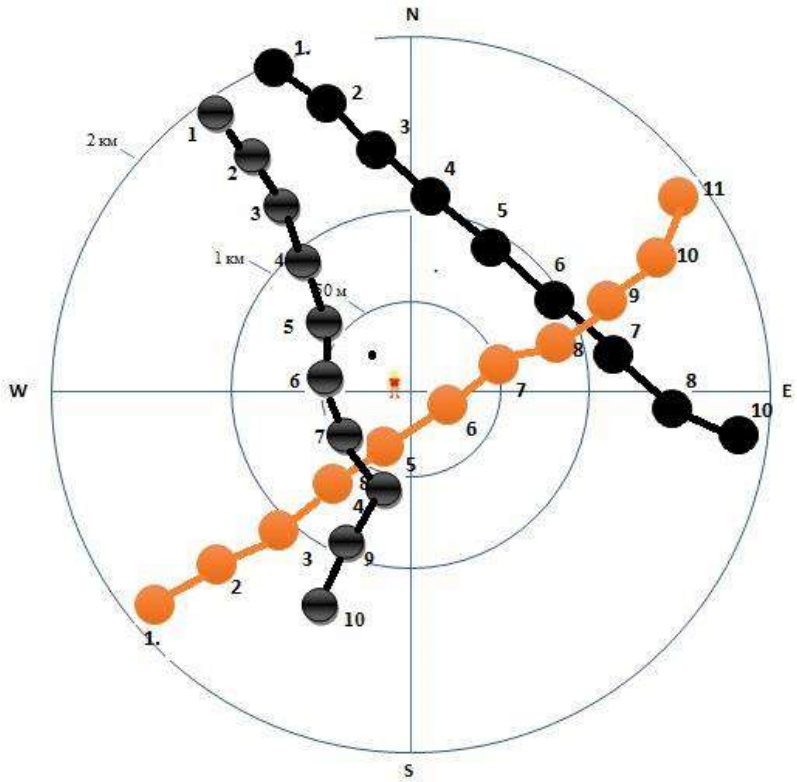


Fig. 31 Flight path (VP 5), 23.06.2020

Table 39 Target species log (VP 5), 23.06.2020

	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 65 m	5 60 m	6 60 m	7 60 m	8 60 m	9 60 m	10 65 m	11 65 m
	Aquila nipalensis	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	
	Aquila nipalensis	9 60 m	10 45 m	9 40 m	10 35 m	9 30 m	10 35 m	9 30 m	10 25 m	9 20 m	10 0 m	

VP. 4

Date:23.06.2020 Start and end time: 14:26 – 17:26
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 3

Date: 24.06.2020 Start and end time: 8:02 – 11:02
Weather:
The air temperature around 23-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

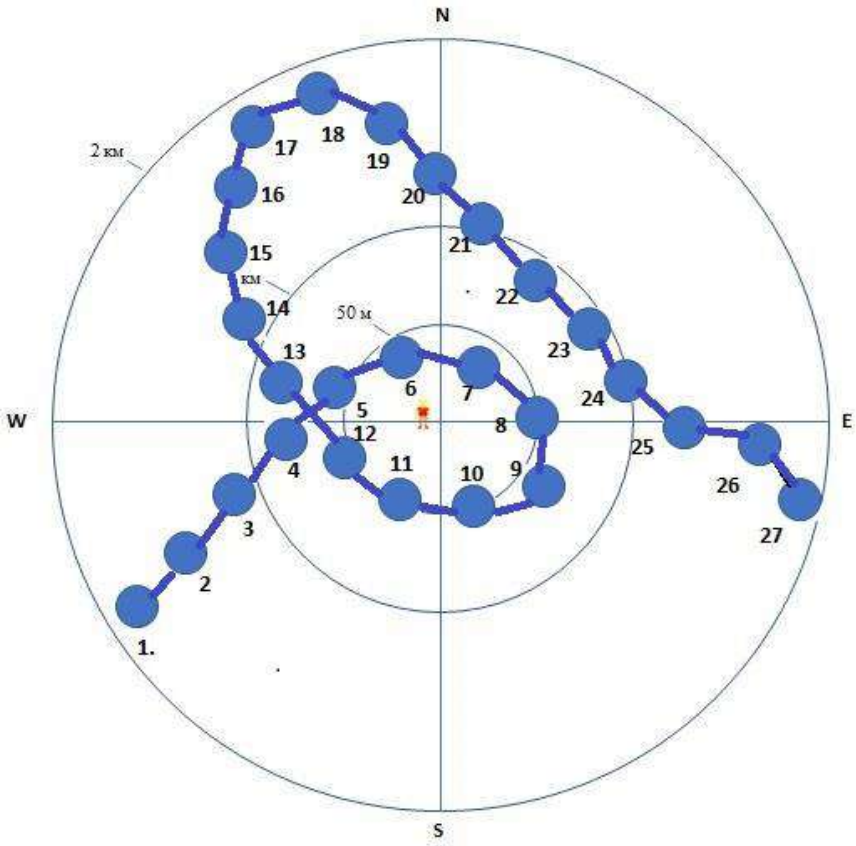


Fig. 32 Flight path (VP 3), 24.06.2020

Table 40 Target species log (VP 3), 24.06.2020

	Aegypius monachus	1 90 m	2 95 m	4 95 m	3 90 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 95 m	12 95 m	13 90 m	14 95 m	15 90 m	16 90 m	17 90 m	18 90 m	19 90 m	20 90 m	21 95 m	22 95 m	23 90 m	24 90 m	25 95 m	26 90 m	27 90 m

VP. 2

Date:24.06.2020 Start and end time: 11:38 – 14:38
Weather:
The air temperature around 29-32°C is clear.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP.1

Date: 24.06.2020 Start and end time: 14:42 – 17:42
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

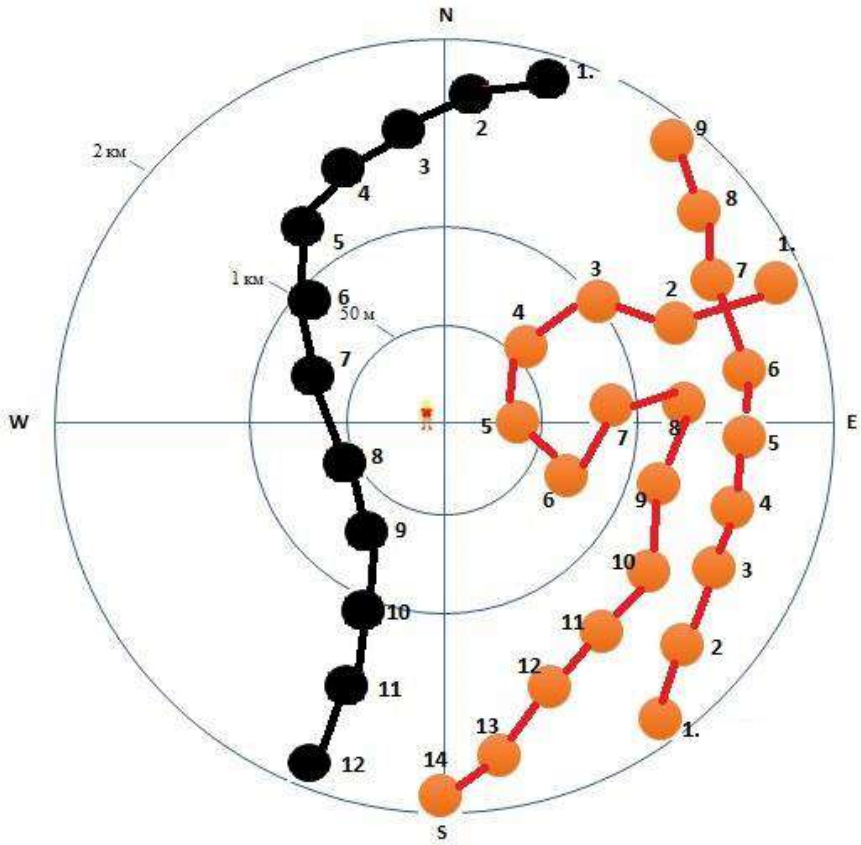


Fig. 33 Flight path (VP 1), 24.06.2020

Table 41 Target species log (VP 1), 24.06.2020

	Aquila nipalensis	1 150 m	2 150 m	3 150 m	4 155 m	5 150 m	6 150 m	7 150 m	8 150 m	9 150 m	10 155 m	11 150 m	12 150 m		
	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 50 m	9 50 m	10 55 m	11 50 m	12 50 m	13 50 m	14 50 m
	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m	7 50 m	8 50 m	9 50 m					

VP.10

Date: 25.06.2020 Start and end time: 8:12 – 11:12
Weather:
The air temperature around 24-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

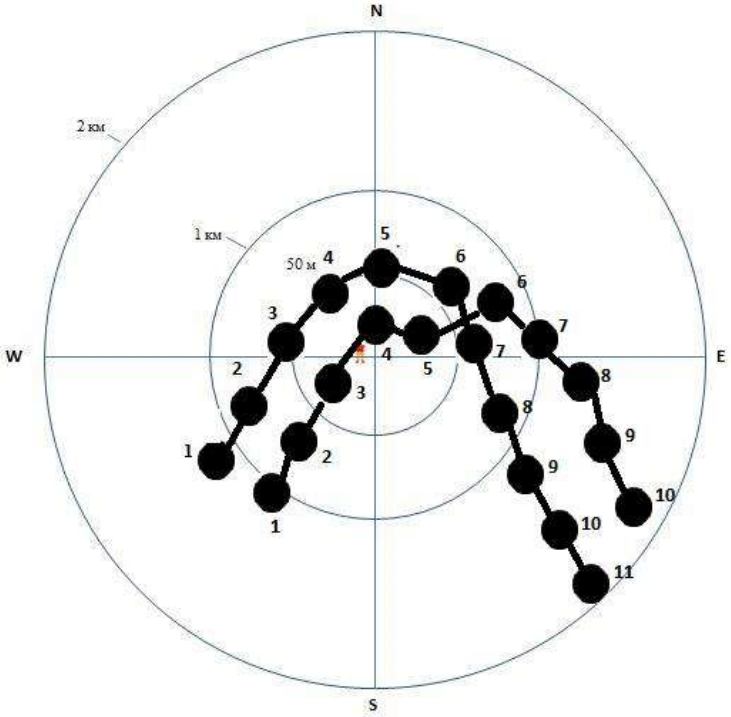


Fig. 34 Flight path (VP 10), 25.06.2020

Table 42 Target species log (VP 10), 25.06.2020

	Aquila nipalensis	1 0 m	2 15 m	3 50 m	4 25 m	5 30 m	6 40 m	7 50 m	8 50 m	9 60 m	10 65 m	
	Aquila nipalensis	1 0 m	2 15 m	3 50 m	4 25 m	5 30 m	6 40 m	7 50 m	8 50 m	9 60 m	10 65 m	11 60 m

VP.11

Date: 25.06.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 12

Date: 25.06.2020 Start and end time: 15:26 – 18:26

Weather:

The air temperature around 32-29°C is clear.

Wind speed approx. (8-10 m/s) No precipitation

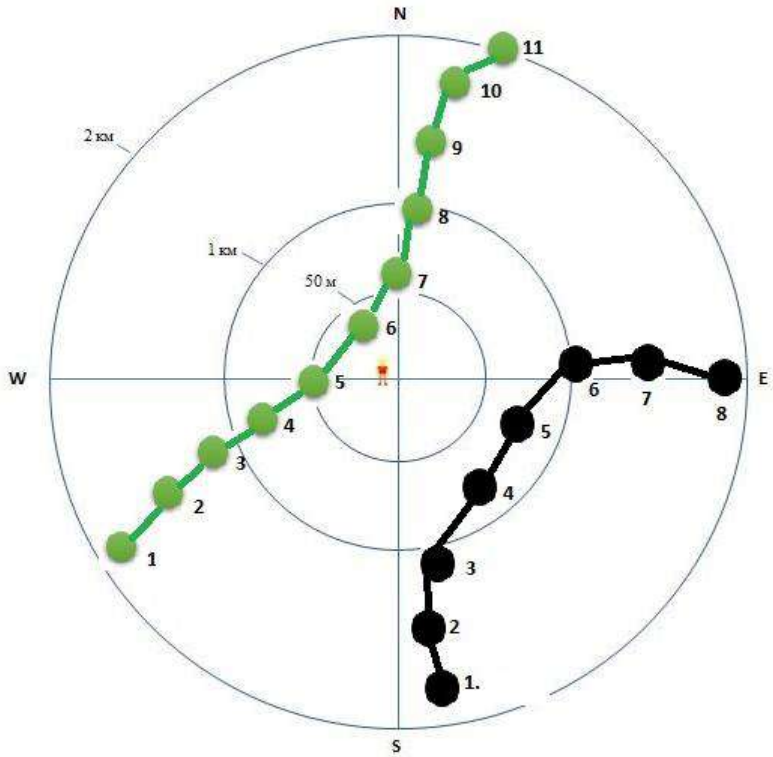


Fig. 35 Flight path (VP 12), 25.06.2020

Table 43 Target species log (VP 12), 25.06.2020

	Gyps fulvus	1 180 m	2 180 m	3 180 m	4 185 m	5 180 m	6 180 m	7 180 m	8 180 m	9 180 m	10 185 m	11 185 m
	Aquila nipalensis	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m			

VP. 9

Date:26.06.2020 Start and end time: 8:26 – 11:26
Weather:
The air temperature around 25-28°C is clear.
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 13

Date: 26.06.2020 Start and end time: 11:58 – 14:58
Weather:
The air temperature around 30-33°C is clear.
Wind speed approx. (8-9 m/s) No precipitation

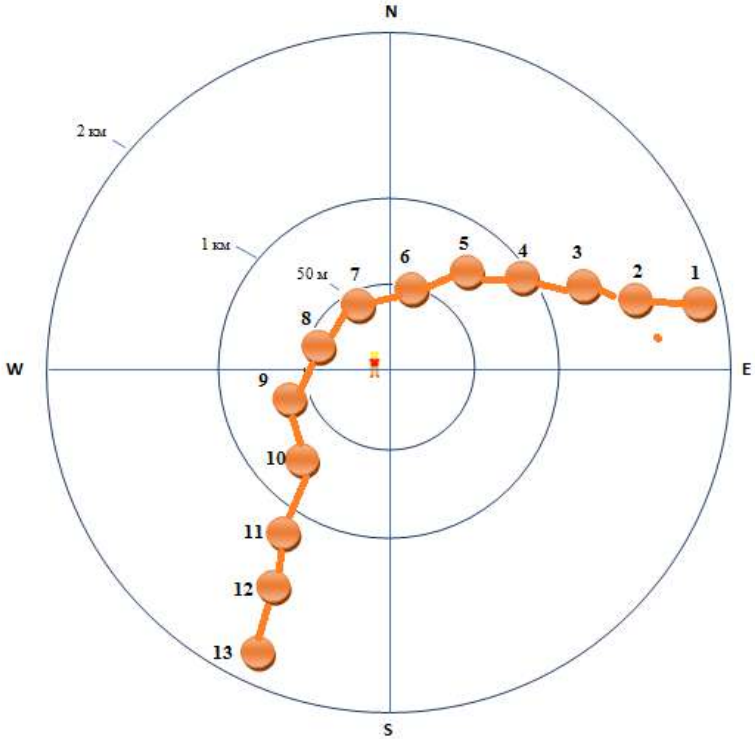


Fig. 36 Flight path (VP 13), 26.06.2020

Table 44 Target species log (VP 13), 26.06.2020

	Neophron percnopterus	1 80 m	2 80 m	3 80 m	4 85 m	5 80 m	6 80 m	7 80 m	8 80 m	9 80 m	10 80 m	11 80 m	12 80 m	13 85 m

VP.14

Date: 26.06.2020 Start and end time: 15:36 – 18:36
Weather:
The air temperature around 32-29°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.7

Date: 27.06.2020 Start and end time: 7:42 – 10:42
Weather:
The air temperature around 24-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.6

Date: 27.06.2020 Start and end time: 11:04 – 14:04
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

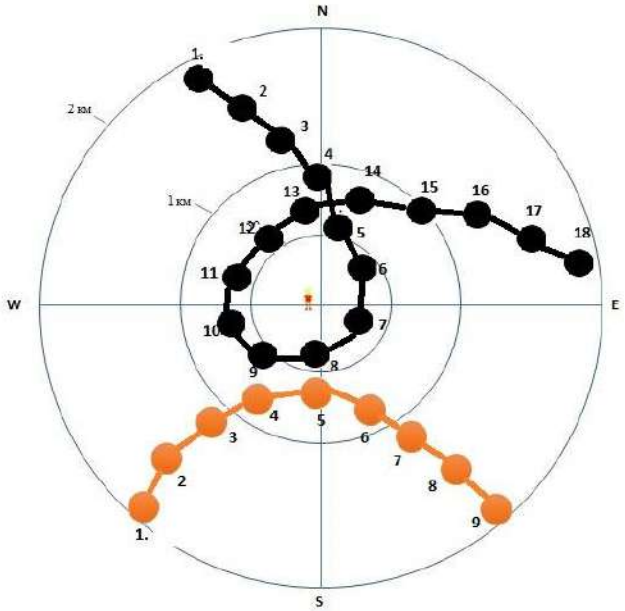


Fig. 37 Flight path (VP 6), 27.06.2020

Table 45 Target species log (VP 6), 27.06.2020

	Aquila nipalensis	1 60 m	2 65 m	3 60 m	4 65 m	5 60 m	6 60 m	7 60 m	8 60 m	9 60 m	10 65 m	11 60 m	12 65 m	13 60 m	14 65 m	15 60 m	16 60 m	17 60 m	18 60 m
	Neophron percnopterus	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m									

VP.8

Date: 27.06.2020 Start and end time: 14:45 – 17:45
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP survey results in July

VP. 12

Date: 01.07.2020 Start and end time: 8:36 – 11:36
Weather:
The air temperature around 24-30°C is clear,
Wind speed approx. (4-5 m/s) No precipitation

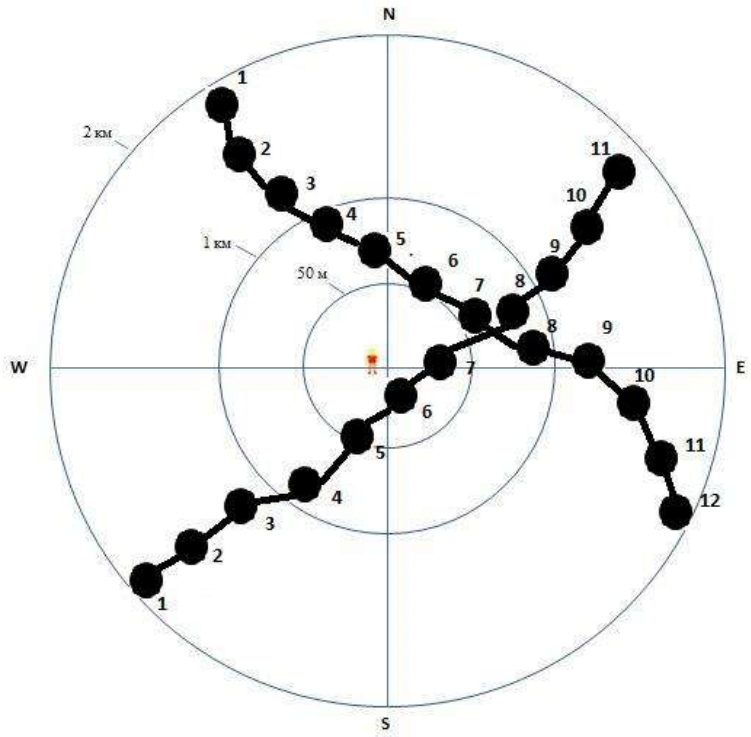


Fig. 38 Flight path (VP 12), 01.07.2020

Table 46 Target species log (VP 12), 01.07.2020

●	*Aquila nipalensis*	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 75 m	9 75 m	10 70 m	11 70 m	12 75 m
●	*Aquila nipalensis*	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 75 m	9 75 m	10 70 m	11 70 m	

VP. 13

Date: 01.07.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature around 33-36°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 14

Date: 01.07.2020 Start and end time: 15:12 – 18:12
Weather:
The air temperature around 36-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

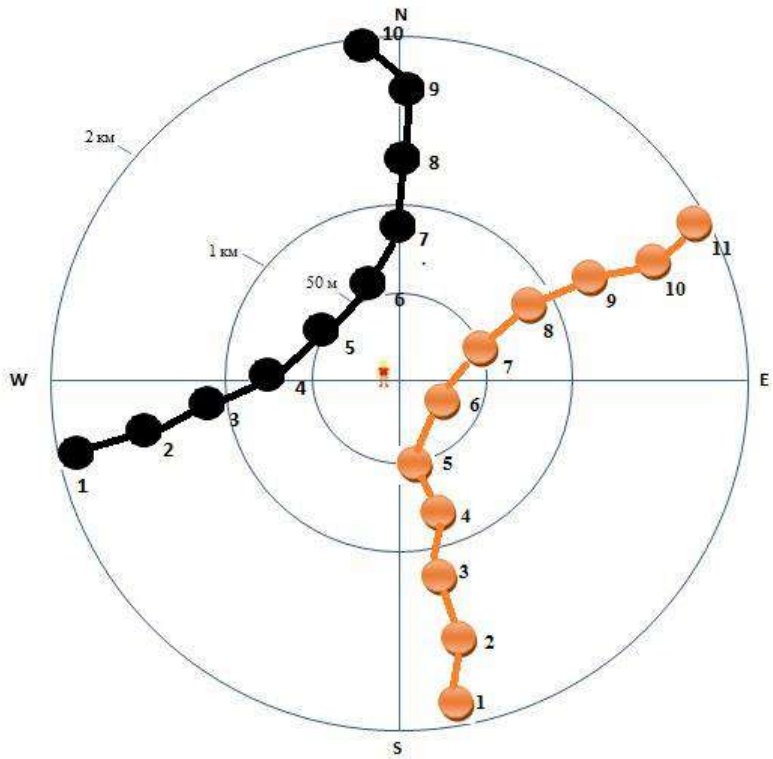


Fig. 39 Flight path (VP 14), 01.07.2020

Table 47 Target species log (VP 14), 01.07.2020

	Neophron percnopterus	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 75 m	11 75 m
	Aquila nipalensis	1 95 m	2 95 m	3 90 m	4 90 m	5 95 m	6 95 m	7 90 m	8 90 m	9 90 m	10 95 m	

VP. 10

Date: 02.07.2020 Start and end time: 7:55 – 10:55
Weather:
The air temperature around 25-30°C is clear.
Wind speed approx. (3-6 m/s) No precipitation

Primary species not found

VP. 11

Date: 02.07.2020 Start and end time: 12:32 – 15:32
Weather:
The air temperature around 33-35°C is clear, .
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.9

Date: 02.07.2020 Start and end time: 16:03– 19:03
Weather:
The air temperature around 35-329°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

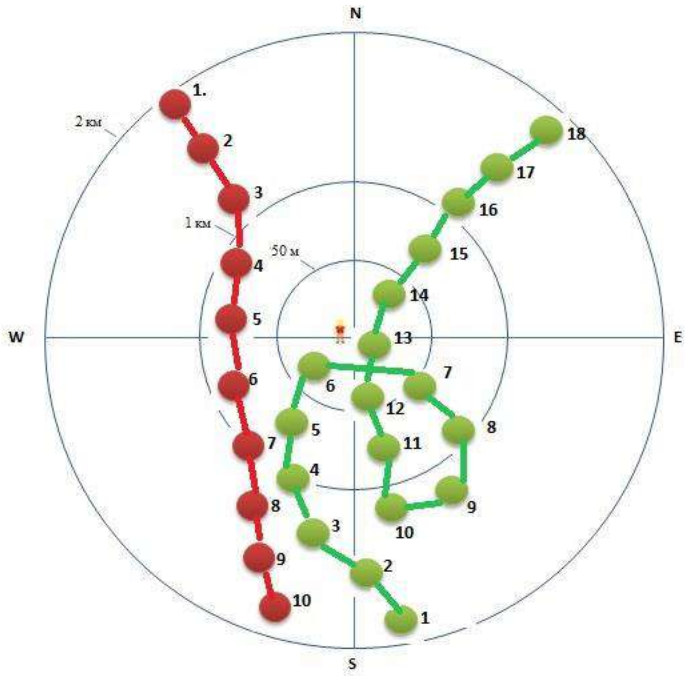


Fig. 40 Flight path (VP 9), 02.07.2020

Table 48 Target species log (VP 9), 02.07.2020

	Gyps fulvus	1 120 m	2 120 m	3 120 m	4 120 m	5 120 m	6 120 m	7 120 m	8 120 m	9 120 M	10 120 m	11 120 m	12 120 m	13 120 M	143 120 m	15 120 m	16 120 m	17 120 m	18 120 m

	Neophron percnopterus	1 75 m	2 75 m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 70 m								

VP. 7

Date: 03.07.2020 Start and end time: 7:34 – 10:34
Weather:
The air temperature around 24-28°C is clear.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 6

Date: 03.07.2020 Start and end time: 11:09 – 14:09
Weather:
The air temperature around 30-34°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

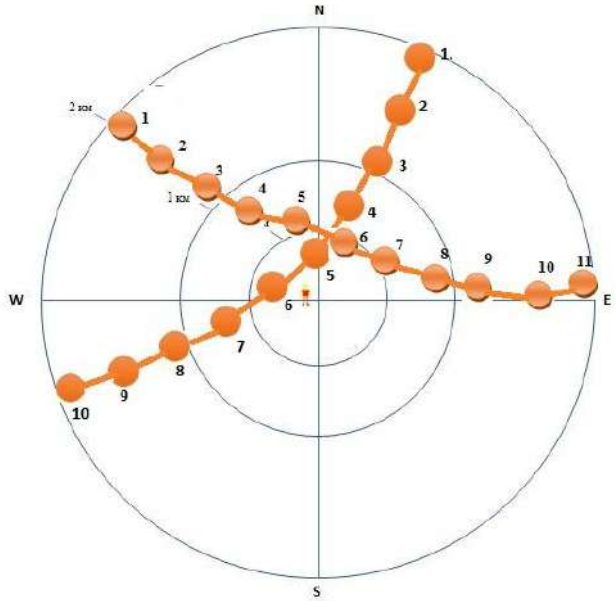


Fig. 41 Flight path (VP 6), 03.07.2020

Table 49 Target species log (VP 6), 03.07.2020

	Neophron percnopterus	1 80m	2 80m	3 80m	4 85m	5 85m	6 80m	7 85m	8 85m	9 80m	10 80m	11 80m
	Neophron percnopterus	1 60m	2 60m	3 60m	4 65m	5 65m	6 60m	7 65m	8 65m	9 60m	10 60m	

VP.8

Date: 03.07.2020 Start and end time: 14:46 – 17:46
Weather:
The air temperature around 35-31°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 5

Date: 04.07.2020 Start and end time: 8:09 – 11:09
Weather:
The air temperature around 24-30°C is clear.
Wind speed approx. (7-9 m/s) No precipitation
Primary species not found

VP.4

Date: 04.07.2020 Start and end time: 11:49 – 14:49
Weather:
The air temperature around 31-35°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

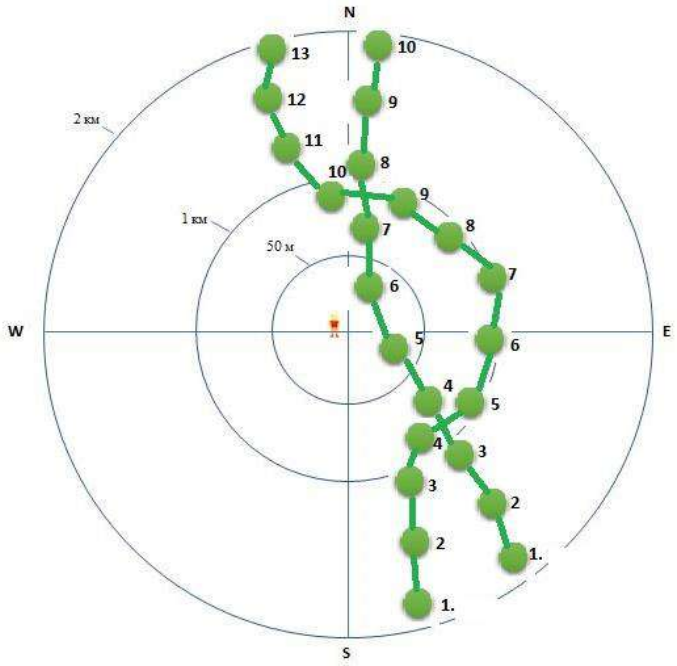


Fig. 42 Flight path (VP 4), 04.07.2020

Table 50 Target species log (VP 4), 04.07.2020

	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 55 m	6 50 m	7 55 m	8 55 m	9 50 m	10 50 m	11 50 m	12 50 m	13 50 m
	Neophron percnopterus	1 50 m	2 50 m	3 50 m	4 55 m	5 55 m	6 50 m	7 55 m	8 55 m	9 50 m	10 50 m			

VP. 3

Date: 04.07.2020 Start and end time: 15:25 – 18:25
Weather:
The air temperature around 33-30°C is clear.
Wind speed approx. (5-7 m/s) No precipitation

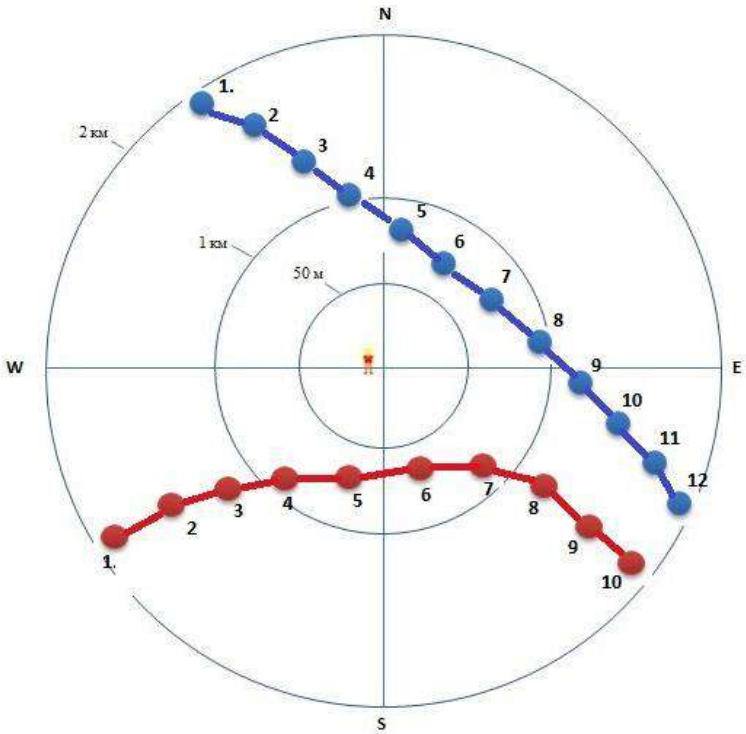


Fig. 43 Flight path (VP 3), 04.07.2020

Table 51 Target species log (VP 3), 04.07.2020

	Aegypius monachus	1 160 m	2 160 m	3 160 m	4 165 m	5 165 m	6 160 m	7 165 m	8 165 m	9 160 m	10 160 m	11 160 m	12 160 m
	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 65 m	5 65 m	6 60 m	7 65 m	8 65 m	9 60 m	10 60 m		

VP.1

Date:05.07.2020 Start and end time: 8:16– 11:16
Weather:
The air temperature around 30-32°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.2

Date:05.07.2020 Start and end time: 11:48 – 14:53
Weather:
The air temperature around 32-35°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

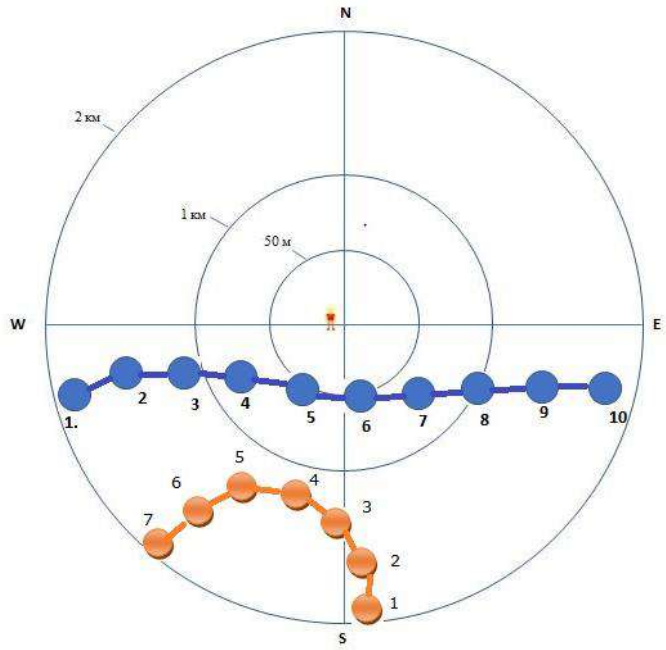


Fig. 44 Flight path (VP 2), 05.07.2020

Table 52 Target species log (VP 2), 05.07.2020

	Aegypius monachus	1 90 m	2 90 m	3 90 m	4 95 m	5 95 m	6 90 m	7 95 m	8 95 m	9 90 m	10 90 m
	Neophron percnopterus	1 70 m	2 70 m	3 70 m	4 75 m	5 75 m	6 70 m	7 75 m			

VP. 5

Date:05.07.2020 Start and end time: 15:16 – 18:16
eather:
The air temperature around 34-29°C is clear.
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP 12

Date: 06.07.2020 Start and end time: 8:11 – 11:11
Weather:
The air temperature around 28-31°C is clear.
Wind speed approx. (4-5 m/s) No precipitation

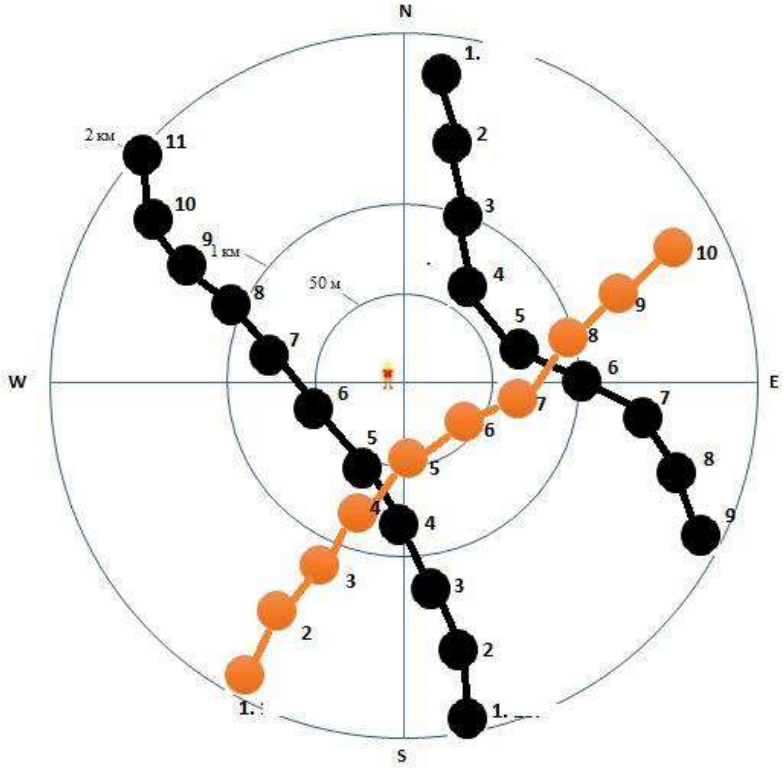


Fig. 45 Flight path (VP 12), 06.07.2020

Table 53 Target species log (VP 12), 06.07.2020

	Neophron percnopterus	1 40 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m	7 45 m	8 45 m	9 40 m	10 40 m	
	Aquila nipalensis	1 60 m	2 60 m	3 60 m	4 65 m	5 65 m	6 60 m	7 65 m	8 65 m	9 60 m	10 60 m	11 60 m
	Aquila nipalensis	1 70 m	2 70 m	3 70 m	4 75 m	5 75 m	6 70 m	7 75 m	8 75 m	9 70 m		

VP.13

Date: 06.07.2020 Start and end time: 11:42 – 14:42
Weather:
The air temperature around 34-36°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 14

Date: 06.07.2020 Start and end time: 15:06 – 18:06
Weather:
The air temperature around 36-30°C is clear.
Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 10

Date: 07.07.2020 Start and end time: 8:15 – 11:15
Weather:
The air temperature around 28-31°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

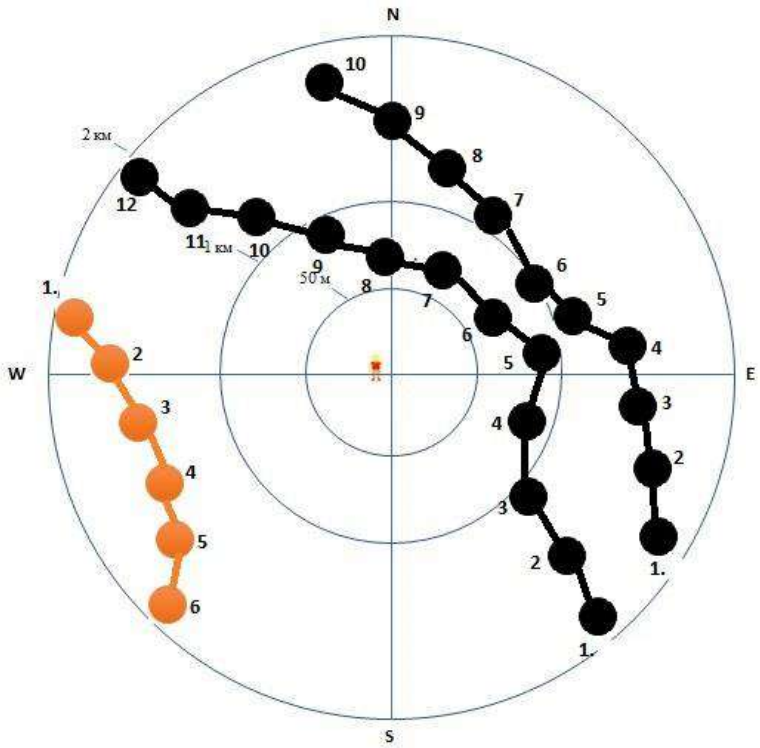


Fig. 46 Flight path (VP 7), 07.07.2020

Table 54 Target species log (VP 7), 07.07.2020

	Aquila nipalensis	1 85 m	2 80 m	3 80 m	4 85 m	5 85 m	6 80 m	7 85 m	8 85 m	9 80 m	10 80 m	11 80 m	12 80 m
	Aquila nipalensis	1 85 m	2 80 m	3 80 m	4 85 m	5 85 m	6 80 m	7 85 m	8 85 m	9 80 m	10 80 m		
	Neophron percnopterus	1 35 m	2 40 m	3 40 m	4 45 m	5 45 m	6 40 m						

VP. 11

Date: 07.07.2020. Start and end time: 11:47 – 14:50
Weather:
The air temperature around 34-36°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP. 9

Date: 07.07.2020 Start and end time: 15:23 – 18:23
Weather:
The air temperature around 35-31°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 7

Date: 08.07.2020 Start and end time: 8:23 – 11:23
Weather:
The air temperature around 28-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.6

Date:08.07.2020 Start and end time: 11:56 – 14:56
Weather:
The air temperature around 30-34°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

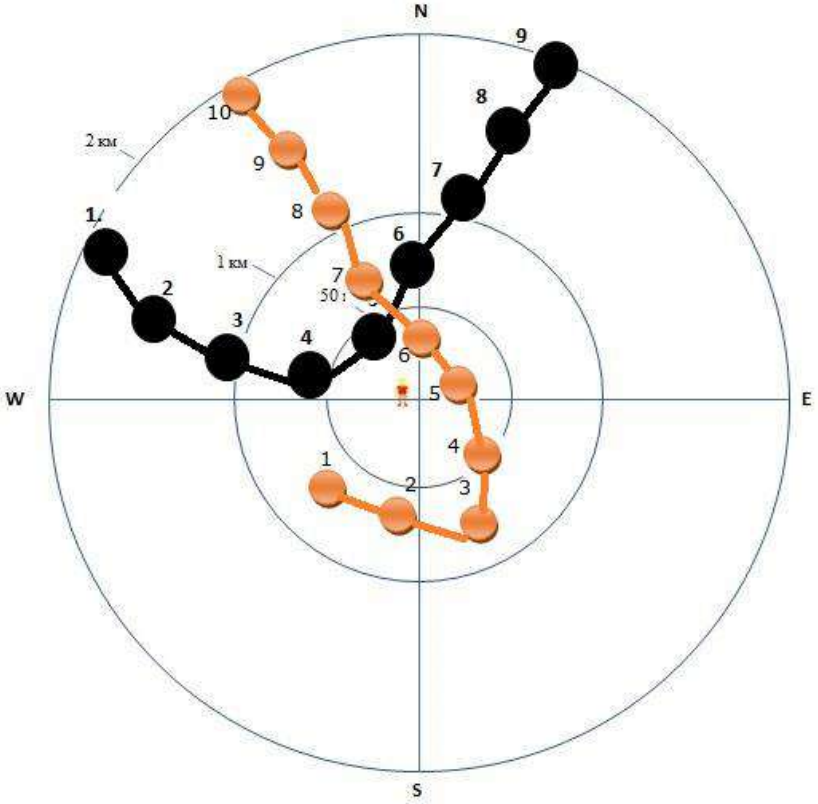


Fig. 47 Flight path (VP 6), 08.07.2020

Table 55 Target species log (VP 6), 08.07.2020

	Neophron percnopterus	1 0 m	2 20 m	3 30 m	4 45 m	5 45 m	6 50 m	7 55 m	8 55 m	9 50 m	10 50 m
	Aquila nipalensis	1 75 m	2 70 m	3 70 m	4 75 m	5 75 m	6 70 m	7 75 m	8 75 m	9 70 m	

VP.8

Date:08.07.2020 Start and end time: 15:23 – 18:23
Weather:
The air temperature around 34-31°C is clear.
Wind speed approx. (8-10 m/s) No precipitation

Primary species not found

VP.8

Date: 13.07.2020 Start and end time: 7:48 – 10:48
Weather:
The air temperature around 26-30°C is clear.
Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP. 5

Date: 13.07.2020 Start and end time: 11:42 – 13:42
Weather:
The air temperature around 34-36°C is clear.
Wind speed approx. (8-10 m/s) No precipitation
Primary species not found

VP. 4

Date: 13.07.2020 Start and end time: 14:26 – 17:27
Weather:
The air temperature around 34-31°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

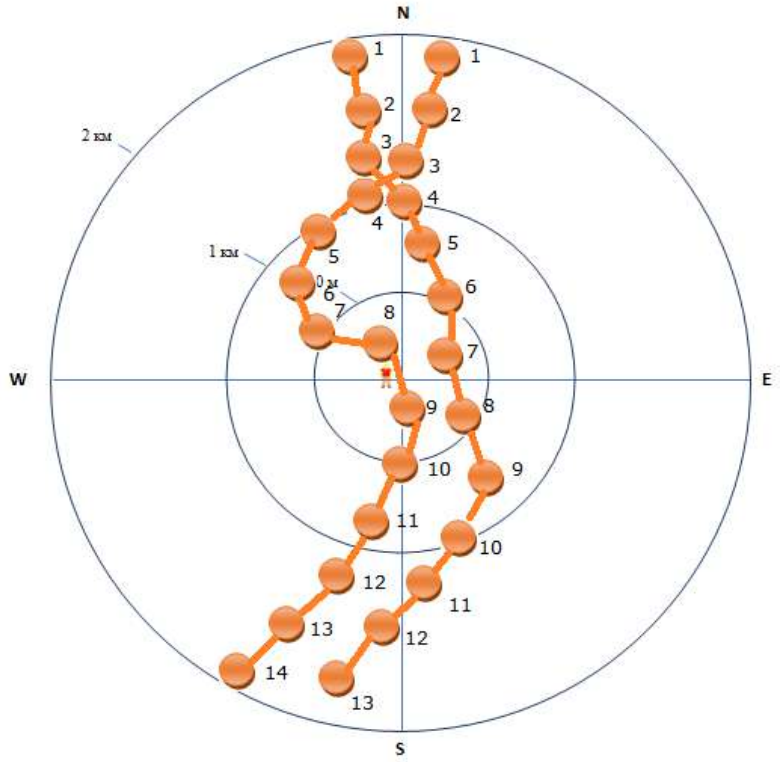


Fig. 48 Flight path (VP 4), 13.07.2020

Table 56 Target species log (VP 4), 13.07.2020

	Neophron percnopterus	1 120 m	2 120 m	3 120 m	4 125 m	5 120 m	6 120 m	7 120 m	8 125 m	9 120 m	10 120 m	11 120 m	12 120 m	13 120 m	14 120 m
	Neophron percnopterus	1 120 m	2 120 m	3 120 m	4 125 m	5 120 m	6 120 m	7 120 m	8 125 m	9 120 m	10 120 m	11 120 m	12 120 m	13 120 m	

VP.3

Date: 14.07.2020 Start and end time: 8:10 – 11:10
Weather:
The air temperature around 29-30°C is clear.
Wind speed approx. (8-9 m/s) No precipitation
Primary species not found

VP. 2

Date: 14.07.2020 Start and end time: 11:43 – 14:23
Weather:
The air temperature around 32-34°C is clear.
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 1

Date: 14.07.2020 Start and end time: 14:56 – 17: 56
Weather:
The air temperature around 34-30°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

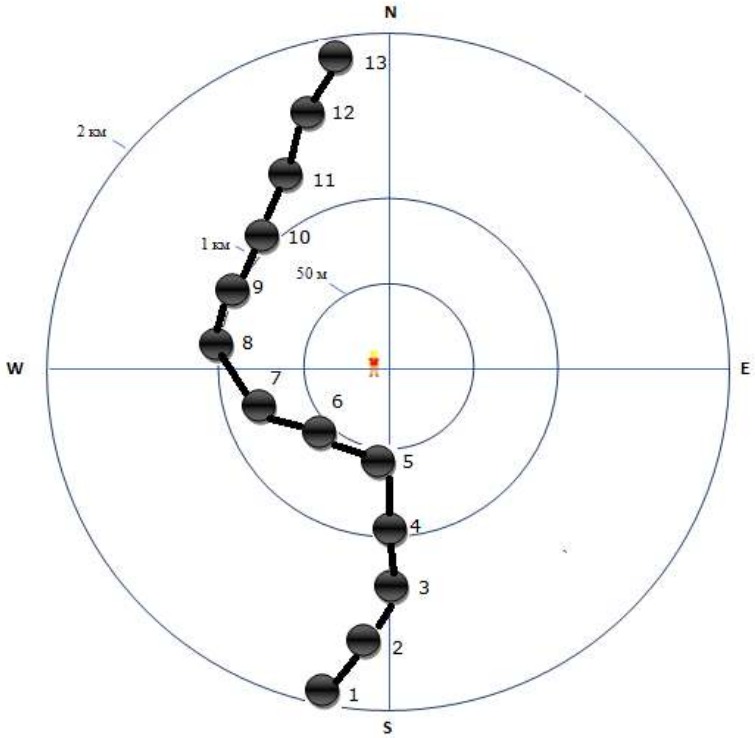


Fig. 49 Flight path (VP 1), 14.07.2020

Table 57 Target species log (VP 1), 14.07.2020

●	*Aquila nipalensis*	1 90 m	2 90 m	3 90 m	4 90 m	5 90 m	6 90 m	7 95 m	8 95 m	9 90 m	10 60m	11 90 m	12 90 m	13 90 m

VP.14

Date: 15.07.2020 Start and end time: 8:22 – 11:22
Weather:
The air temperature around 28-31°C is clear.
Wind speed approx. (3-5 m/s) No precipitation

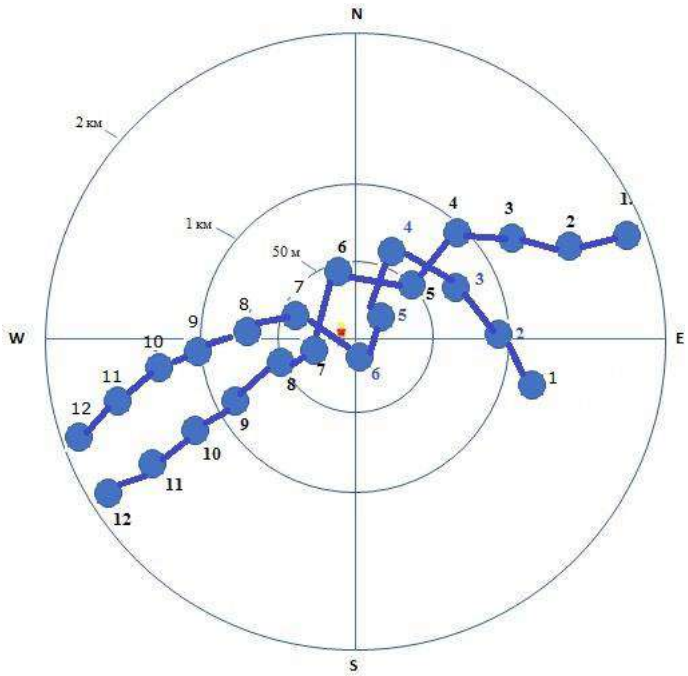


Fig. 50 Flight path (VP 14), 15.07.2020

Table 58 Target species log (VP 14), 15.07.2020

	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 60 m	5 60 m	6 60 m	7 55 m	8 55 m	9 50 m	10 50m	11 50 m	12 50 m
	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 60 m	5 60 m	6 60 m	7 55 m	8 55 m	9 50 m	10 50m	11 50 m	12 50 m

VP. 13

Date: 15.07.2020 Start and end time: 11:58 – 14:58
Weather:
The air temperature around 32-35°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.12

Date:15.07.2020 Start and end time: 15:27 – 18:27
Weather:
The air temperature around 34-29°C is clear.
Wind speed approx. (5-6 m/s) No precipitation

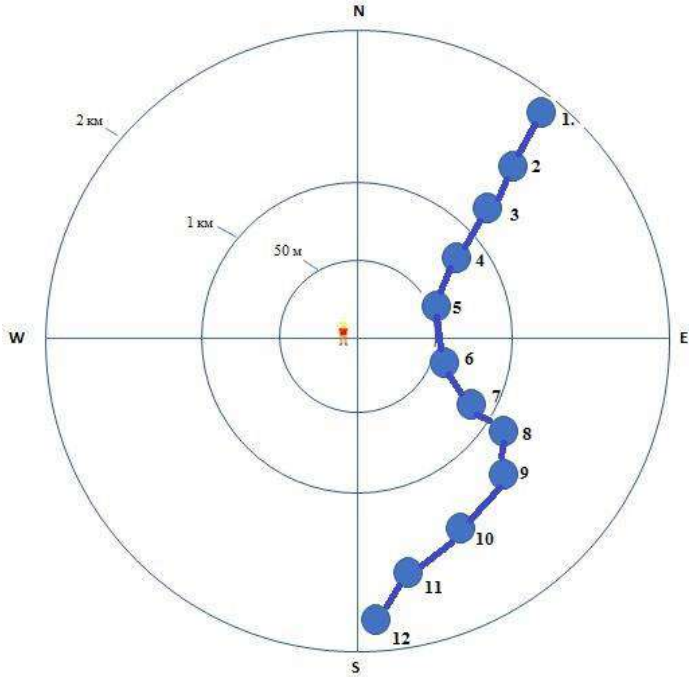


Fig. 51 Flight path (VP 12), 15.07.2020

Table 59 Target species log (VP 12), 15.07.2020

	Neophron percnopterus	1 160 m	2 160 m	3 160 m	4 160 m	5 160 m	6 160 m	7 155 m	8 155 m	9 160 m	10 160m	11 160 m	12 160 m

VP 10

Date:16.07.2020 Start and end time: 8:26 – 11:26

Weather:

The air temperature around 26-31°C is clear.

Wind speed approx. (3-5 m/s) No precipitation

Primary species not found

VP. 11

Date:16.07.2020 Start and end time: 12:06 – 15:46
eather:
The air temperature around 34-36°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 9

Date: 16.07.2020 Start and end time: 16:12 – 19:12
Weather:
The air temperature around 34-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

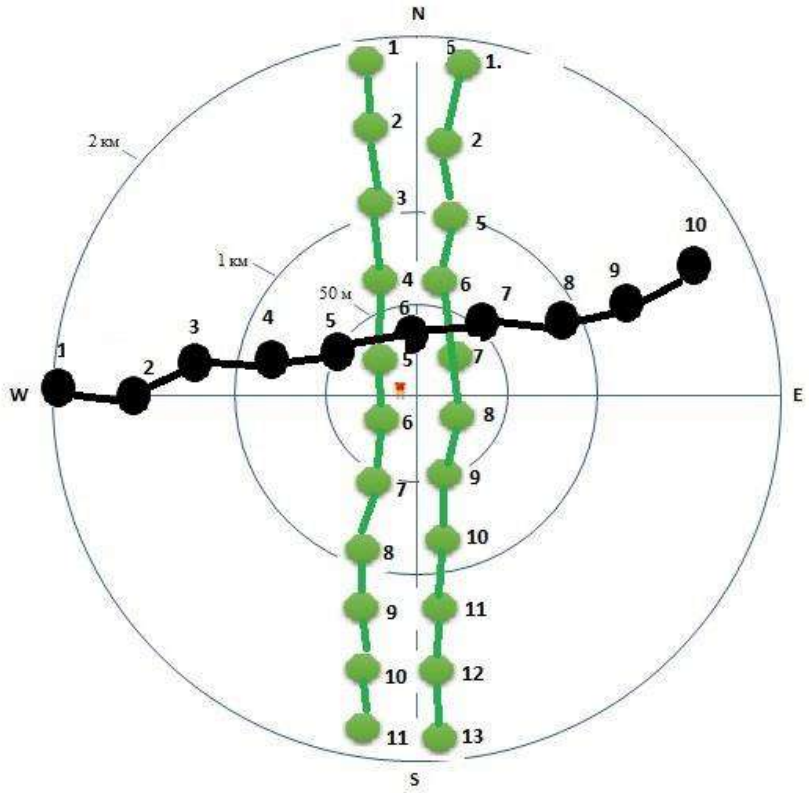


Fig. 52 Flight path (VP 9), 16.07.2020

Table 60 Target species log (VP 9), 16.07.2020

	Gyps fulvus	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 90 m	13 90 m
	Gyps fulvus	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m		
	Aquila nipalensis	1 120 m	2 120 m	3 120 m	4 125 m	5 120 m	6 120 m	7 120 m	8 120 m	9 120 m	10 120 m			

VP. 8

Date:17.07.2020 Start and end time: 7:53 – 10:53

Weather:

The air temperature around 28-30°C is clear.

Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP. 6

Date: 17.07.2020 Start and end time: 11:12 – 14:12
Weather:
The air temperature around 34-36°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

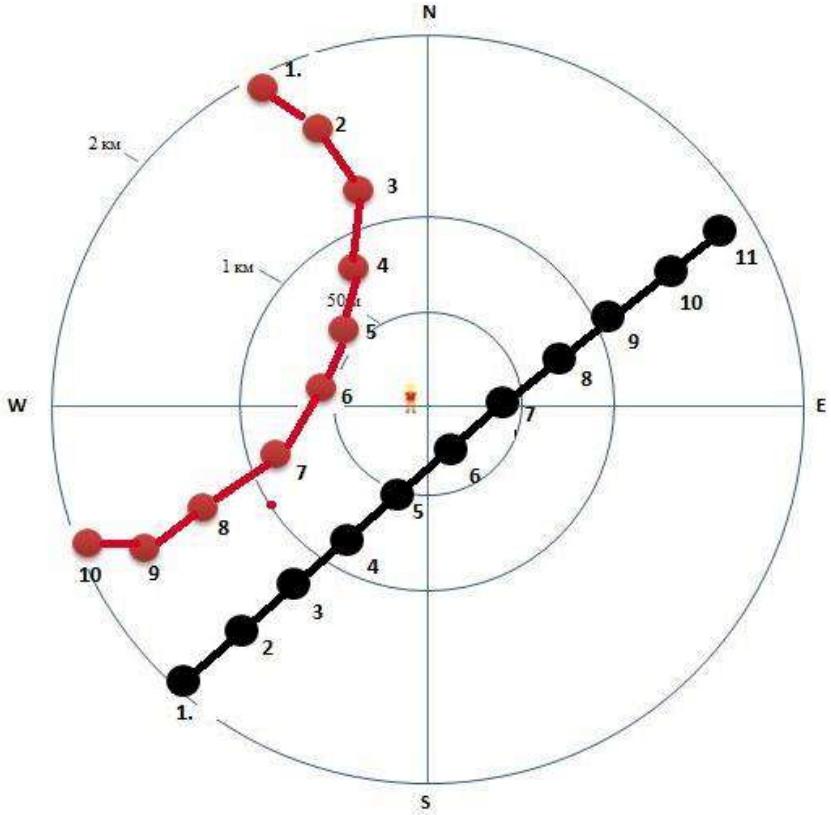


Fig. 53 Flight path (VP 6), 17.07.2020

Table 61 Target species log (VP 10), 17.07.2020

	Aquila nipalensis	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m
	Neophron percnopterus	1 70 m	2 70 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m	10 70 m	

VP. 7

Date:17.07.2020 Start and end time: 14:48 – 17:48
eather:
The air temperature around 34-32°C is clear.
Wind speed approx. (1-3 m/s) No precipitation
Primary species not found

VP.8

Date: 18.07.2020 Start and end time: 8:15 – 11:15
Weather:
The air temperature around 26-32°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.5

Date:18.07.2020 Start and end time: 11:56 – 14:56
Weather
The air temperature around 32-35°C is clear.
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP. 4

Date: 18.07.2020 Start and end time: 15:18 – 18:18
Weather:
The air temperature around 35-31°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

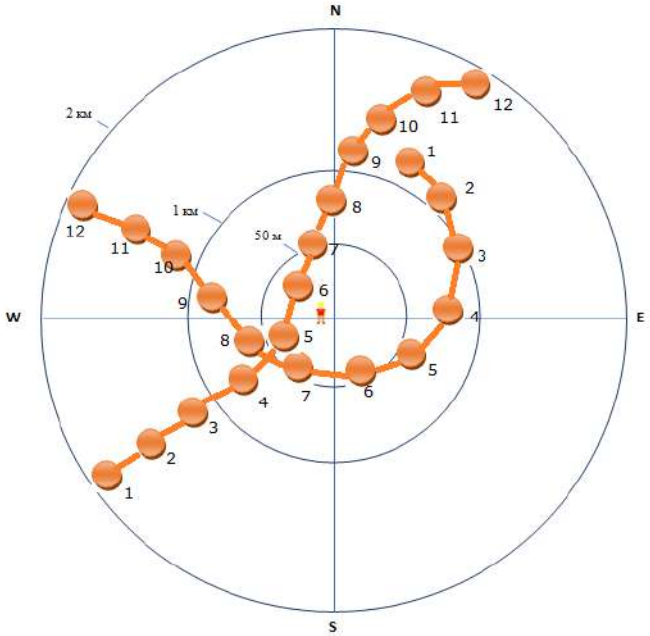


Fig. 54 Flight path (VP 4), 18.07.2020

Table 62 Target species log (VP 4), 18.07.2020

	Neophron percnopterus	1 60 m	2 60 m	3 60 m	4 65 m	5 60 m	6 60 m	7 60 m	8 60 m	9 60 m	10 65 m	11 60 m	12 60 m
	Neophron percnopterus	1 120 m	2 120 m	3 120 m	4 125 m	5 120 m	6 120 m	7 120 m	8 120 m	9 120 m	10 125 m	11 120 m	12 120 m

VP. 3

Date: 19.07.2020 Start and end time: 8:02 – 11:02
Weather:
The air temperature around 29-31°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

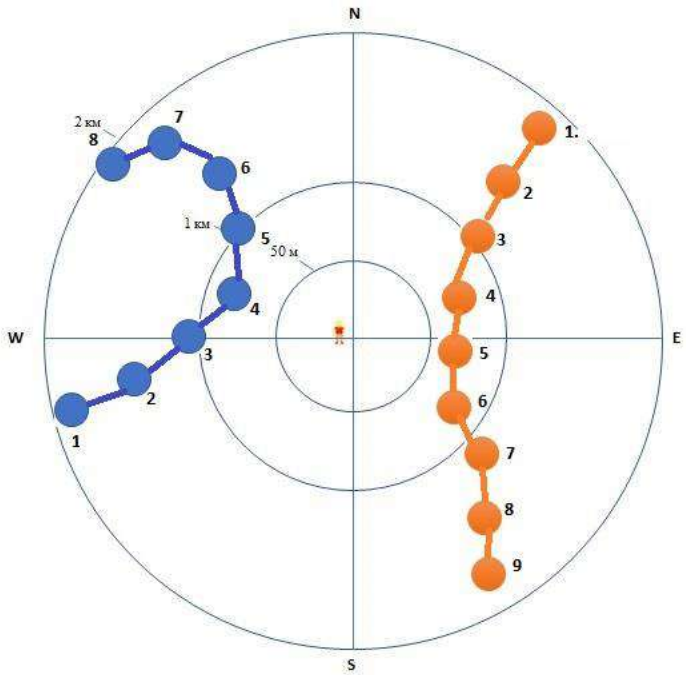


Fig. 55 Flight path (VP 3), 19.07.2020

Table 63 Target species log (VP 3), 19.07.2020

	Neophron percnopterus	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m
	Gyps fulvus	1 120 m	2 125 m	3 120 m	4 125 m	5 120 m	6 120 m	7 120 m	8 120 m	

VP. 2

Date:19.07.2020 Start and end time: 11:38 – 14:38
Weather:
The air temperature around 32-35°C is clear.
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP.1

Date: 19.07.2020 Start and end time: 15:12 – 18:12
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

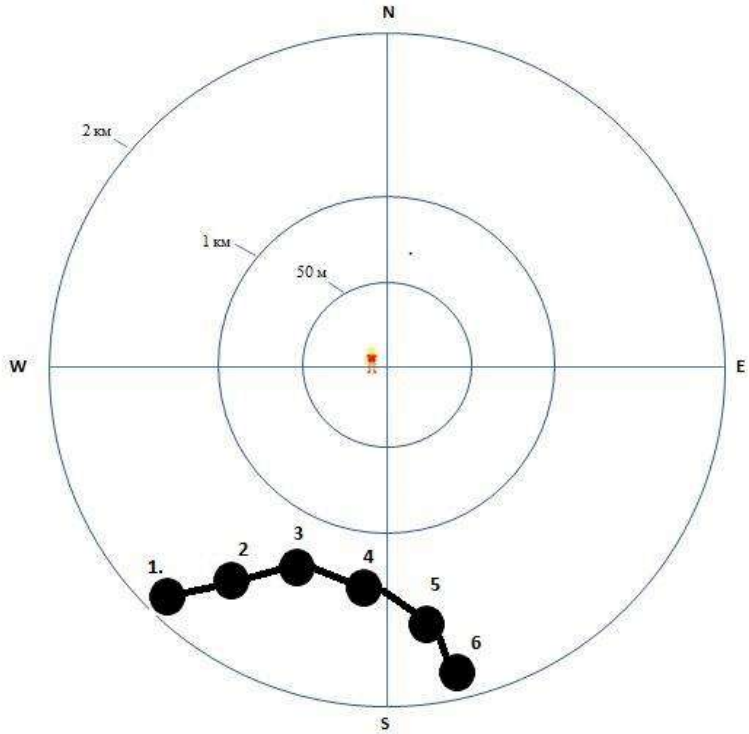


Fig. 56 Flight path (VP 1), 19.07.2020

Table 64 Target species log (VP 1), 19.07.2020

●	*Aquila nipalensis*	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m

VP.12

Date: 24.07.2020 Start and end time: 7:15 – 10:15
Weather:
The air temperature around 28-30°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 13

Date: 24.07.2020 Start and end time: 10:46 – 13:46

Weather:

The air temperature around 29-32°C is clear.

Wind speed approx. (6-8 m/s) No precipitation

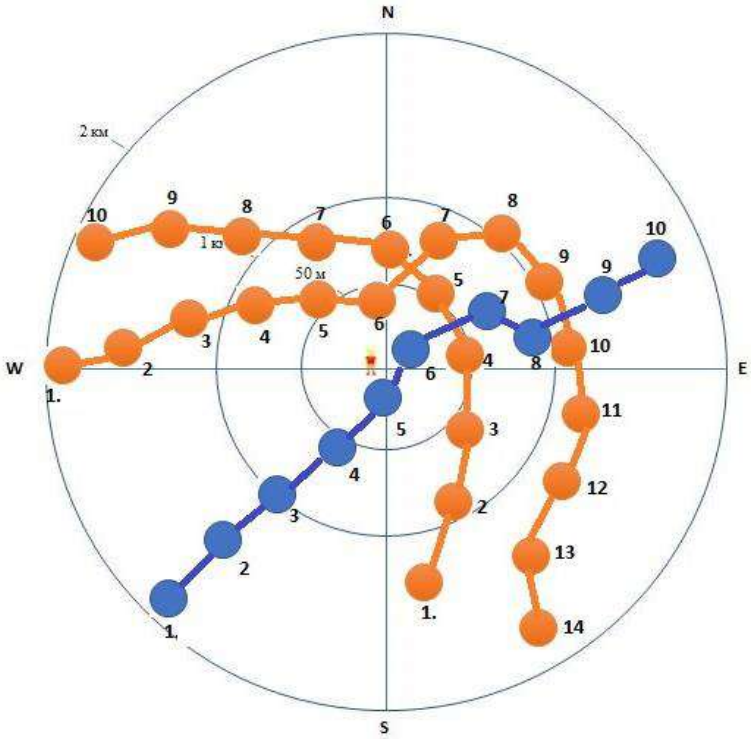


Fig. 57 Flight path (VP 13), 24.07.2020

Table 65 Target species log (VP 13), 24.07.2020

	Aquila nipalensis	1 160 m	2 160 m	3 160 m	4 165 m	5 160 m	6 160 m	7 160 m	8 160 m	9 160 m	10 165 m				
	Neophron percnopterus	1 90 m	2 90 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 90 m	13 90 m	14 95 m
	Neophron percnopterus	1 0 m	2 5 m	3 10 m	4 15 m	5 20 m	6 25 m	7 30 m	8 35 m	9 40 m	10 40 m				

VP.1 4

Date:24.07.2020 Start and end time: 14:26 – 17:26
Weather:
The air temperature around 34-31°C is clear.
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 10

Date: 25.07.2020 Start and end time: 8:02 – 11:02
Weather:
The air temperature around 28-30 °C is clear.
Wind speed approx. (6-8 m/s) No precipitation

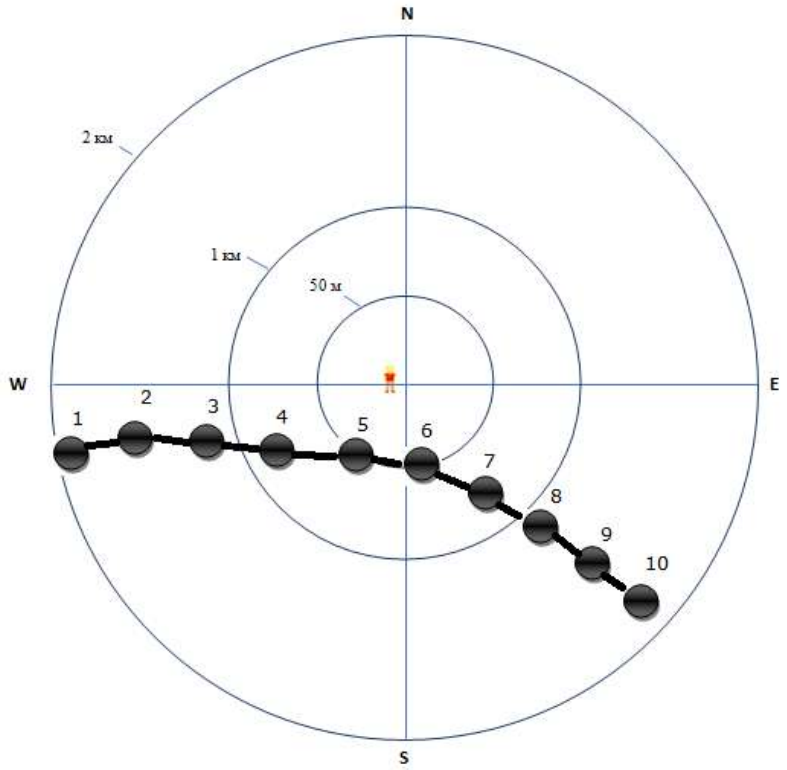


Fig. 58 Flight path (VP 10), 25.07.2020

Table 66 Target species log (VP 10), 25.07.2020

	Aquila nipalensis	1 90 m	2 95 m	4 95 m	3 90 m	5 90m	6 90m	7 90 m	8 90 m	9 90 m	10 95 m

VP. 11

Date:25.07.2020 Start and end time: 11:38 – 14:28
Weather:
The air temperature around 34-36°C is clear.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP.9

Date: 25.07.2020 Start and end time: 14:42 – 17:42
Weather:
The air temperature around 34-32°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

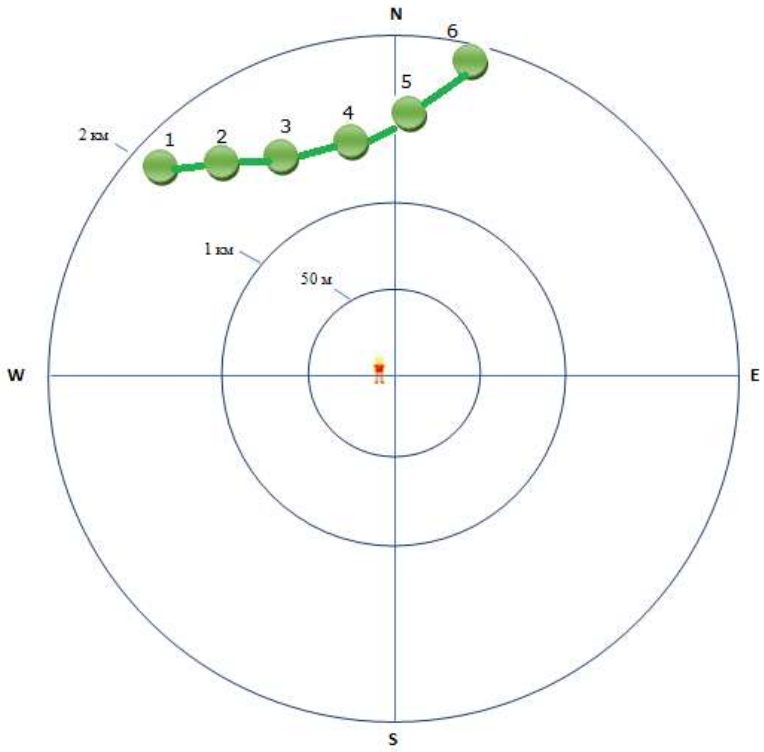


Fig. 59 Flight path (VP 9), 25.07.2020

Table 67 Target species log (VP 9), 25.07.2020

	Gyps fulvus	1 50 m	2 50 m	3 50 m	4 55 m	5 50 m	6 50 m

VP.5

Date: 26.07.2020 Start and end time: 8:12 – 11:12
Weather:
The air temperature around 28-32°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.6

Date: 26.07.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature around 32-34°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 7

Date: 26.07.2020 Start and end time: 15:26 – 18:26

Weather:

The air temperature around 34-31°C is clear.

Wind speed approx. (5-6 m/s) No precipitation

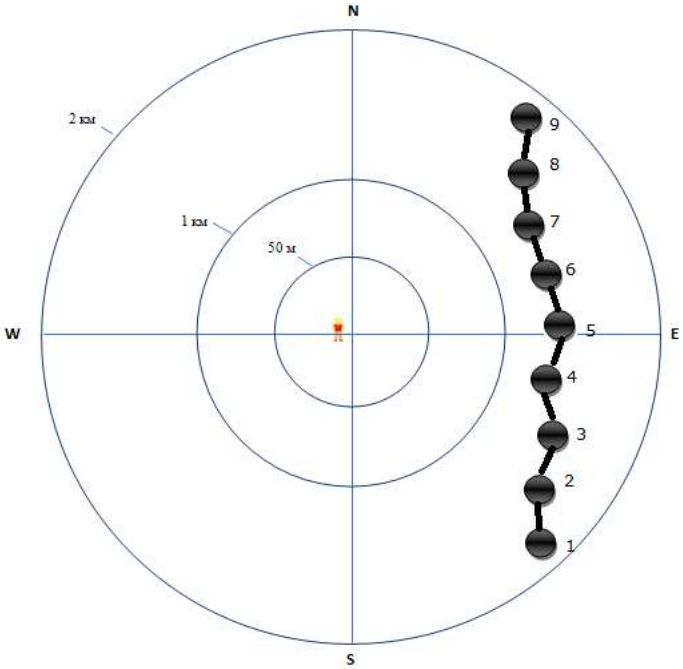


Fig. 60 Flight path (VP 7), 27.07.2020

Table 68 Target species log (VP 7), 26.07.2020

●	*Aquila nipalensis*	1 60 m	2 60 m	3 60 m	4 65 m	5 60 m	6 60 m	7 60 m	8 60 m	9 60 m

VP. 1

Date:27.06.2020 Start and end time: 8:26 – 11:26
Weather:
The air temperature around 26-29°C is clear.
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 2

Date: 27.07.2020 Start and end time: 11:58 – 14:58
Weather:
The air temperature around 30-33°C is clear.
Wind speed approx. (8-9 m/s) No precipitation

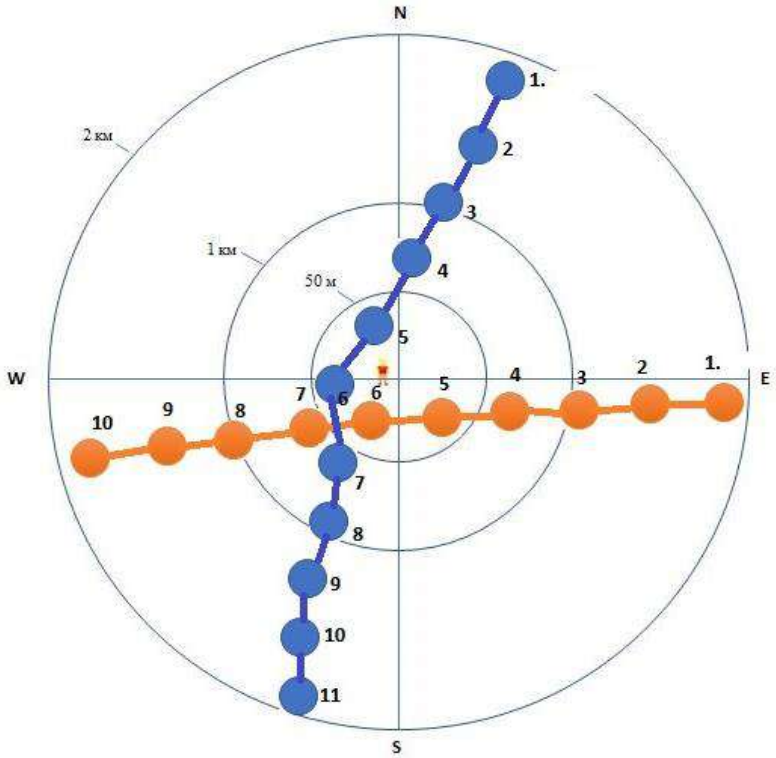


Fig. 61 Flight path (VP 2), 27.07.2020

Table 69 Target species log (VP 2), 27.07.2020

	Neophron percnopterus	1 80 m	2 80 m	3 80 m	4 85 m	5 80 m	6 80 m	7 80 m	8 80 m	9 80 m	10 80 m	
	Aegypius monachus	1 180 m	2 180 m	3 180 m	4 185 m	5 180 m	6 180 m	7 180 m	8 180 m	9 180 m	10 180 m	11 180 m

VP.3

Date: 27.07.2020 Start and end time: 15:36 – 18:36
Weather:
The air temperature around 32-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.12

Date: 28.07.2020 Start and end time: 7:42 – 10:42
Weather:
The air temperature around 24-28°C is clear.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.13

Date: 28.07.2020 Start and end time: 11:04 – 14:04
Weather:
The air temperature around 32-34°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

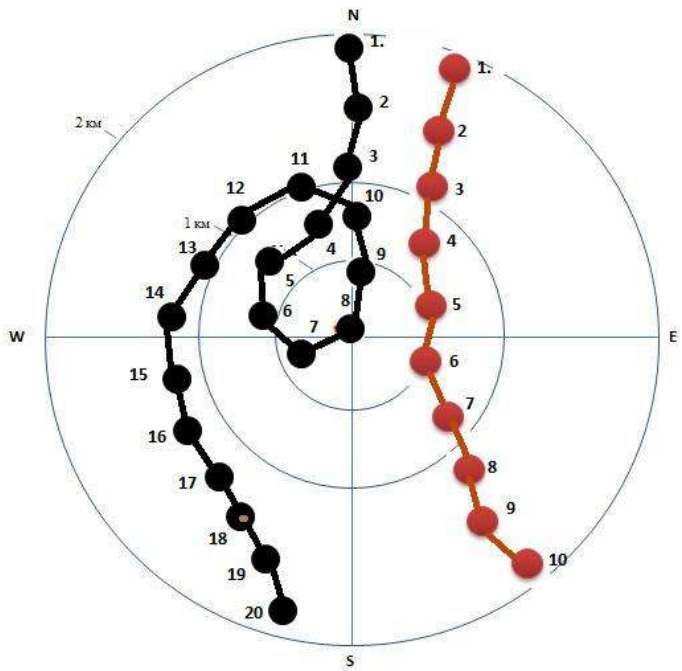


Fig. 62 Flight path (VP 13), 28.07.2020

Table 70 Target species log (VP 13), 28.07.2020

	Aquila nipalensis	1 90 m	2 95 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 95 m	13 90 m	14 95 m	15 90 m	16 90 m	17 90 m	18 90 m	19 90 m	20 95 m
	Neophron percnopterus	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m	10 70 m										

VP.14

Date: 28.07.2020 Start and end time: 14:45 – 17:45
Weather:
The air temperature around 32-29°C is clear.
Wind speed approx. (5-8 m/s) No precipitation
Primary species not found

VP.9

Date: 29.07.2020 Start and end time: 8:04 – 11:04
Weather:
The air temperature around 26-29°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.10

Date: 29.07.2020 Start and end time: 11:39 – 14:39
Weather:
The air temperature around 32-34°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

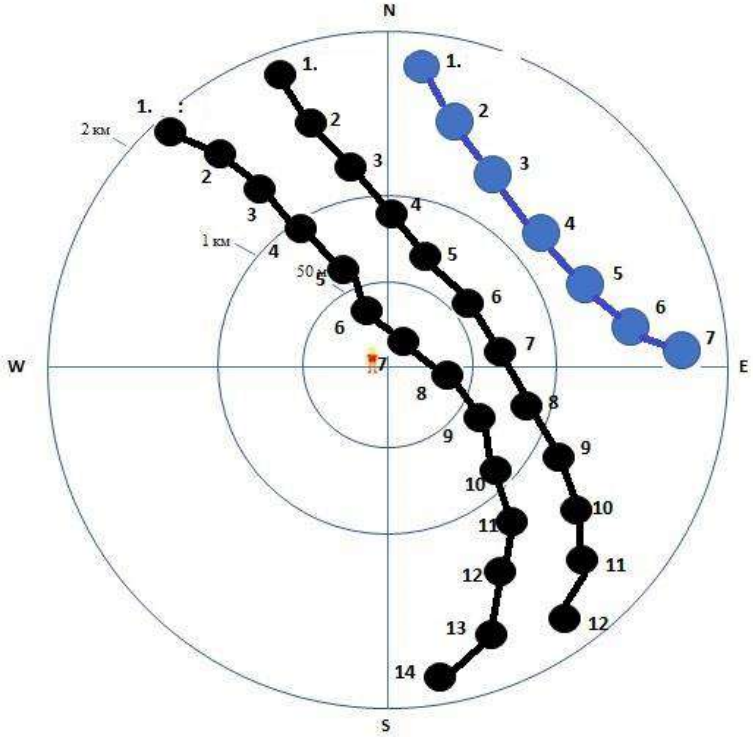


Fig. 63 Flight path (VP 10), 29.07.2020

Table 71 Target species log (VP 10), 29.07.2020

	Aquila nipalensis	1 90 m	2 95 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 95 m	13 90 m	14 95 m
	Aquila nipalensis	1 90 m	2 95 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m	11 90 m	12 95 m		
	Neophron percnopterus	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m							

VP.11

Date: 29.07.2020 Start and end time: 15:15 – 18:15
Weather:
The air temperature around 34-32°C is clear.
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP.7

Date: 30.07.2020 Start and end time:7:14 – 11:14
Weather:
The air temperature around 24-30°C is clear.
Wind speed approx. (6-8 m/s) No precipitation

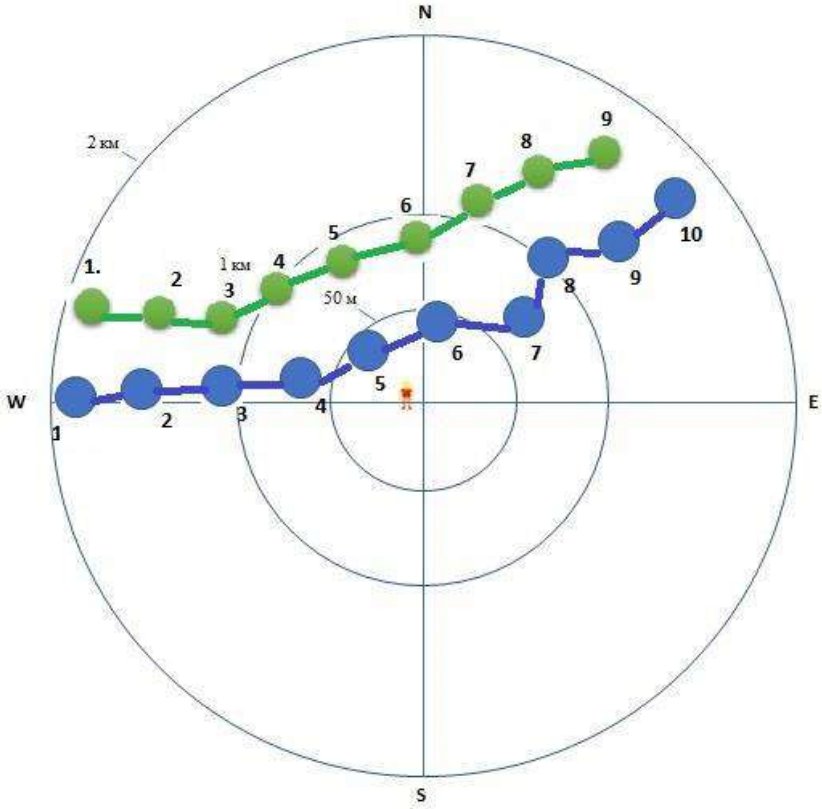


Fig. 64 Flight path (VP 7), 30.07.2020

Table 72 Target species log (VP 7), 30.07.2020

	Aquila nipalensis	1 90 m	2 95 m	3 90 m	4 95 m	5 90 m	6 90 m	7 90 m	8 90 m	9 90 m	10 95 m
	Neophron percnopterus	1 70 m	2 75 m	3 70 m	4 75 m	5 70 m	6 70 m	7 70 m	8 70 m	9 70 m	

VP.6

Date: 30.07.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature around 32-34°C is clear.
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP.8

Date: 30.07.2020 Start and end time: 15:23 – 18:23
Weather:
The air temperature around 34-29°C is clear.
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP survey results in August

VP. 12

Date: 01.08.2020 Start and end time: 8:36 – 11:36
Weather:
The air temperature: start 23°C end 28°C
Clear
Wind speed approx. (2-5 m/s)
No precipitation

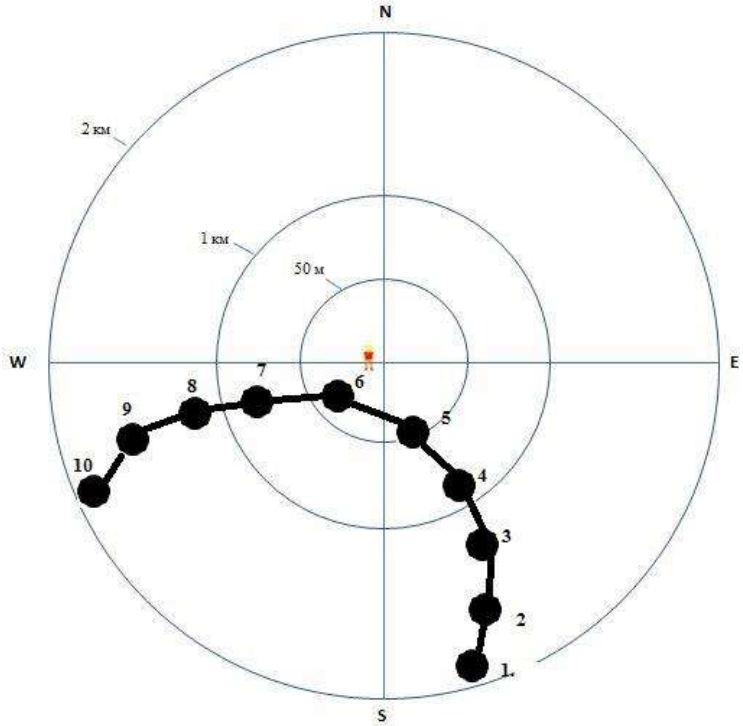


Fig. 65 *Flight path (VP 12), 01.08.2020*

Table 73 Target species log (VP 12), 01.08.2020

	Aquila nipalensis	**9:53**	1 75 m	2 75m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 75 m	9 75m	10 70 m

VP. 13

Date: 01.08.2020 Start and end time: 11:45 – 14:45
Weather:
The air temperature: start 29°C end 32°C
Clear
Wind speed approx. (3-5 m/s)
No precipitation
Primary species not found

VP. 14

Date: 01.08.2020 Start and end time: 15:12 – 18:12

Weather

The air temperature: start 32°C end 28°C

Clear

Wind speed approx. (4-5 m/s)

No precipitation

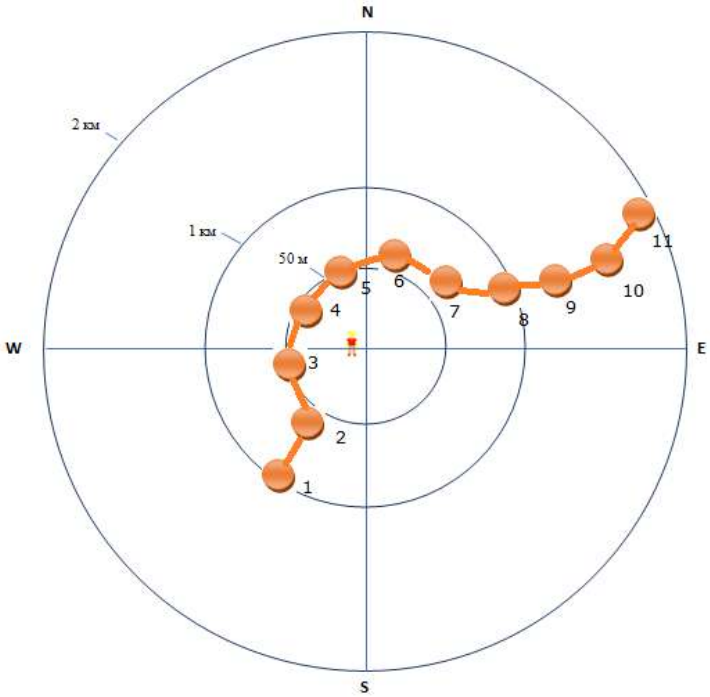


Fig. 66 Flight path (VP 14), 01.08.2020

Table 74 Target species log (VP 14), 01.08.2020

	Neophron percnopterus	**17:45**	1 55 m	2 55m	3 50m	4 50m	5 55m	6 75m	7 50m	8 50m	9 50 m	10 55 m	11 55 m

VP. 9

Date: 02.08.2020 Start and end time: 7:55 – 10:55

Weather

The air temperature: start 23°C end 28°C

Clear

Wind speed approx. (8-9 m/s)

No precipitation

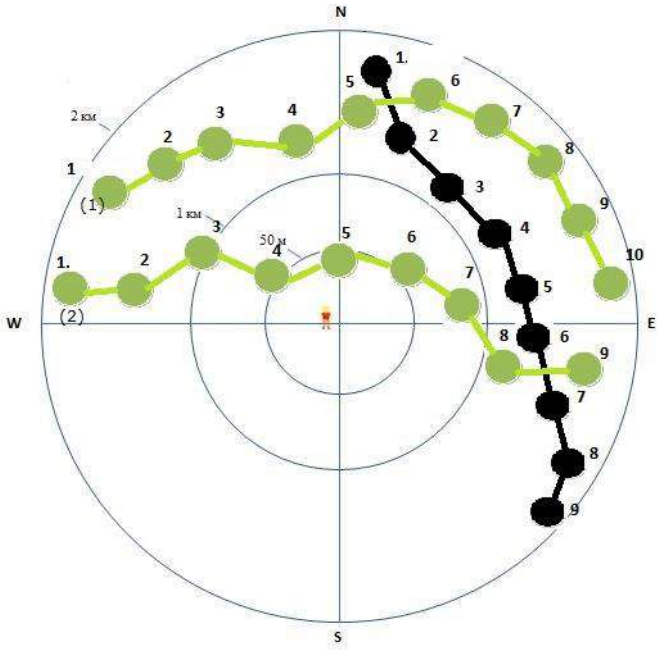


Fig. 67 Flight path (VP 9), 02.08.2020

Table 75 Target species log (VP 9), 02.08.2020

	Aquila nipalensis	**8:41**	1 90 m	2 95 m	3 90 m	4 90m	5 95m	6 95m	7 90m	8 90m	9 90 m	

	Gyps fulvus(1)	**9:52**	1 120 m	2 125 m	3 120 m	4 120m	5 125m	6 125m	7 130m	8 130m	9 130 m	10 135 m
	Gyps fulvus(2)	**9:52**	1 120 m	2 125 m	3 120 m	4 120m	5 125m	6 125m	7 130m	8 130m	9 130 m	

VP.11

Date: 02.08.2020 Start and end time: 11:32 – 14:32
Weather:
The air temperature: start 30°C end 33°C Clear
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.10

Date: 02.08.2020 Start and end time: 15:03– 18:03
Weather:
The air temperature: start 33°C end 28°C Clear
Wind speed approx. (4-5 m/s) No precipitation

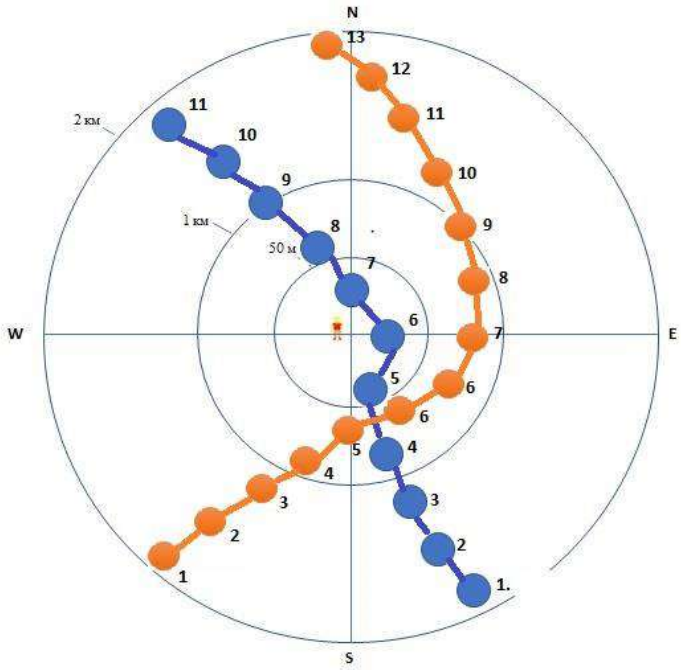


Fig. 68 *Flight path (VP 10), 02.08.2020*

Table 76 Target species log (VP 10), 02.08.2020

	Neophron percnopterus	**17:23**	1 75 m	2 75m	3 70 m	4 70 m	5 75 m	6 75 m	7 70 m	8 70 m	9 70 m	10 70 m	11 75 m	12 75 m	13 75 m
	Aegypius monachus	**17:52**	1 120 m	2 120m	3 120 m	4 120 m	5 120 m	6 120 m	7 120 m	8 120 m	9 120m	10 120 m	11 120 m		

VP. 7

Date: 03.08.2020 Start and end time: 7:34 – 10:34
Weather:
The air temperature: start 24°C end 28°C Clear
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 5

Date: 03.08.2020 Start and end time: 11:09 – 14:09
Weather:
The air temperature: start 29°C end 32°C Clear
Wind speed approx. (6-8m/s) No precipitation
Primary species not found

VP. 4

Date: 03.08.2020 Start and end time: 14:59 – 17:59

Weather:

The air temperature: start 33°C end 28°C Clear

Wind speed approx. (7-9 m/s) No precipitation

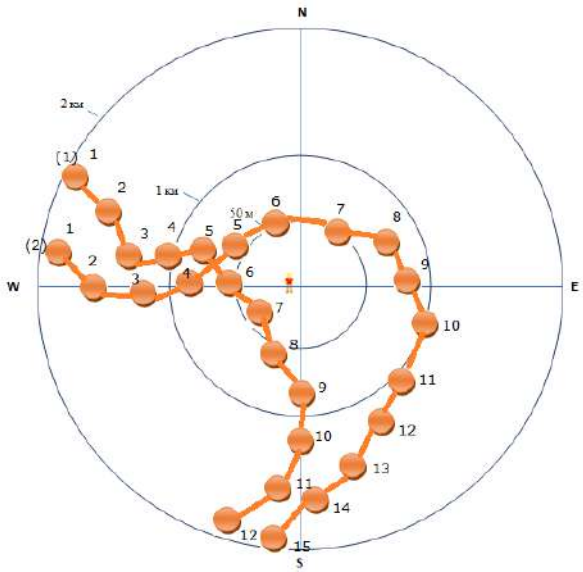


Fig. 69 Flight path (VP 4), 03.08.2020

Table 77 Target species log (VP 4), 03.08.2020

	Neophron percnopterus(2)	**17:18**	1 90m	2 90m	3 90 m	4 95m	5 95m	6 90m	7 95m	8 95m	9 90m	10 90m	11 90m	12 90m	13 90 m	14 95m	15 95m
	Neophron percnopterus(1)	**17:18**	1 90m	2 90m	3 90 m	4 95m	5 95m	6 90m	7 95m	8 95m	9 90m	10 90m	11 90m	12 90m			

VP.1

Date: 04.08.2020 Start and end time: 8:16 – 11:16
Weather:
The air temperature: start 24°C end 27°C Clear
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 2

Date: 04.08.2020 Start and end time: 11:49 – 14:49
Weather:
The air temperature: start 29°C end 32°C is clear.
Wind speed approx. (5-7m/s) No precipitation

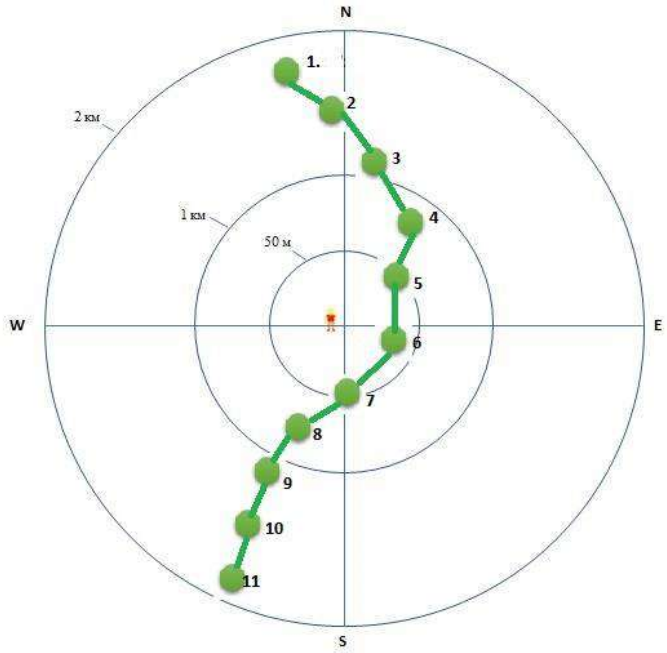


Fig. 70 Flight path (VP 2), 04.08.2020

Table 78 Target species log (VP 2), 04.08.2020

	Gyps fulvus	**12:19**	1 90m	2 90m	3 90 m	4 95m	5 95m	6 90m	7 95m	8 95m	9 90m	10 90m	11 90m

VP.4

Date:04.08.2020 Start and end time: 15:13– 18:13
Weather:
The air temperature:start 33°C end 30°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date:05.08.2020 Start and end time: 7:48 – 10:53
Weather:
The air temperature: start 23°C end 27°C is clear
Wind speed approx. (5-6 m/s) No precipitation

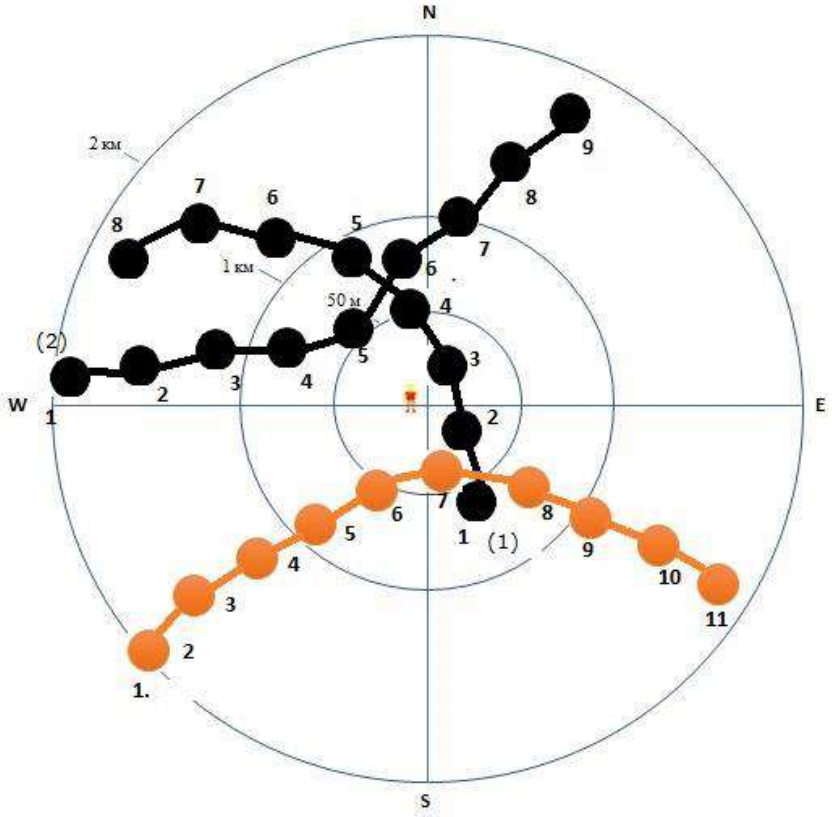


Fig. 71 Flight path (VP 12), 05.08.2020

Table 79 Target species log (VP 12), 05.08.2020

	Aquila nipalensis (1)	**9:28**	1 0 m	2 5 m	3 10 m	4 15m	5 15m	6 20m	7 25m	8 25m			
	Neophron percnopterus	**10:14**	1 70m	2 70m	3 70 m	4 75m	5 75m	6 70m	7 75m	8 75m	9 70m	10 70m	11 70 m
	Aquila nipalensis (2)	**10:36**	1 75m	2 75 m	3 70 m	4 75 m	5 75 m	6 70 m	7 75 m	8 75 m	9 70 m		

VP. 13

Date:05.08.2020 Start and end time: 11:26 – 14:26
Weather:
The air temperature: start 29°C end 34°C is clear
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 14

Date: 05.08.2020 Start and end time: 14:56 – 17:56
Weather:
The air temperature: start 34°C end 30°C is clear
Wind speed approx. (6-8 m/s) No precipitation

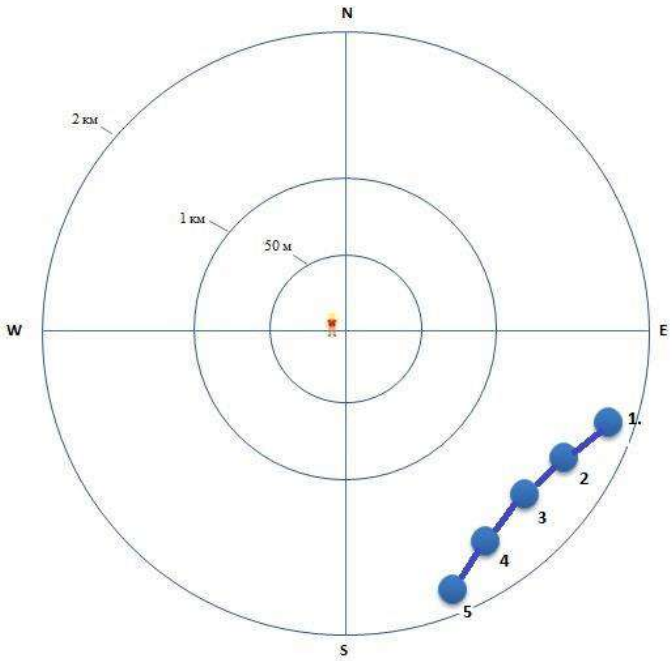


Fig. 72 Flight path (VP 14), 05.08.2020

Table 80 Target species log (VP 14), 05.08.2020

	Aegypius monachus	**16:37**	1 100m	2 100m	3 100 m	4 105m	5 105m

VP.10

Date: 06.08.2020 Start and end time: 7:42 – 10:42
Weather:
The air temperature: start 24°C end 28°C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 11

Date: 06.08.2020 Start and end time: 11:16 – 14:16
Weather:
The air temperature: start 30°C end 34°C is clear
Wind speed approx. (3-5 m/s) No precipitation

Primary species not found

VP. 5

Date: 06.08.2020 Start and end time: 15:15 – 18:15
Weather:
The air temperature: start 33°C end 29 °C is clear
Wind speed approx. (3-5 m/s) No precipitation

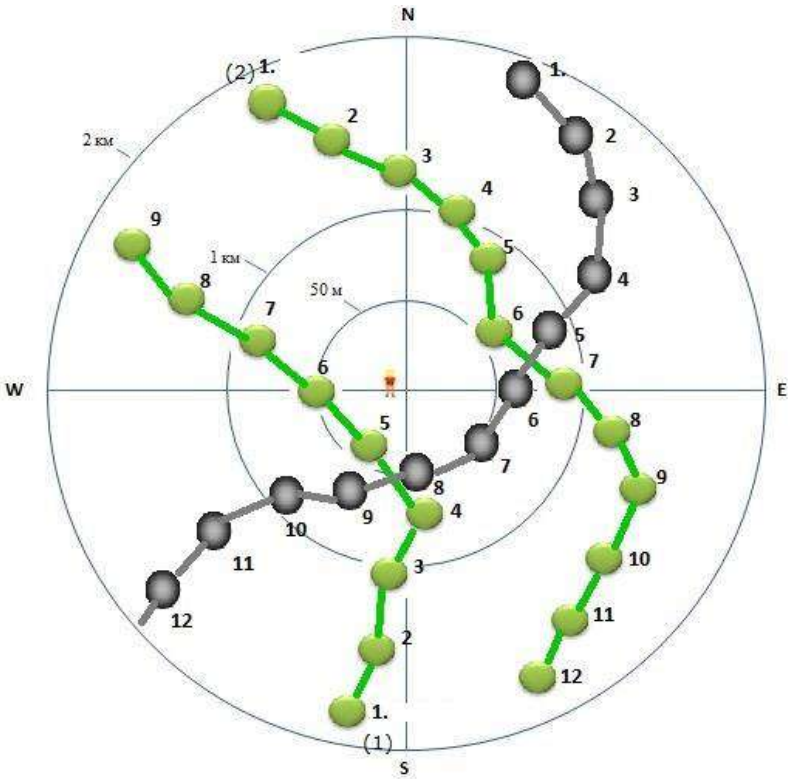


Fig. 73 Flight path(VP 5), 06.08.2020

Table 81 Target species log (VP 5), 06.08.2020

	Gyps fulvus(1)	**16:12**	1 135 m	2 135 m	3 130 m	4 135m	5 135m	6 130m	7 135m	8 135m	9 130m			
	Aquila nipalensis	**16:24**	1 75 m	2 70 m	3 70 m	4 75m	5 75m	6 70m	7 75m	8 75m	9 70m	10 70m	11 70 m	12 70 m
	Gyps fulvus(2)	**17:46**	1 180 m	2 180 m	3 180 m	4 185m	5 185m	6 180m	7 185m	8 185m	9 180m	10 180m	11 180 m	12 180 m

VP. 1

Date: 07.08.2020. Start and end time: 7:47 – 10:50
Weather:
The air temperature: start 22 °C end 26 °C is clear
Wind speed approx. (10-12 m/s) No precipitation

Primary species not found

VP. 2

Date: 07.08.2020 Start and end time:11:23 – 14:23
Weather:
The air temperature: start 28 °C end 32 °C is clear
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.3

Date: 07.08.2020 Start and end time: 15:21 – 18:21
Weather:
The air temperature: start 32 °C end 29 °C is clear
Wind speed approx. (8-10 m/s) No precipitation

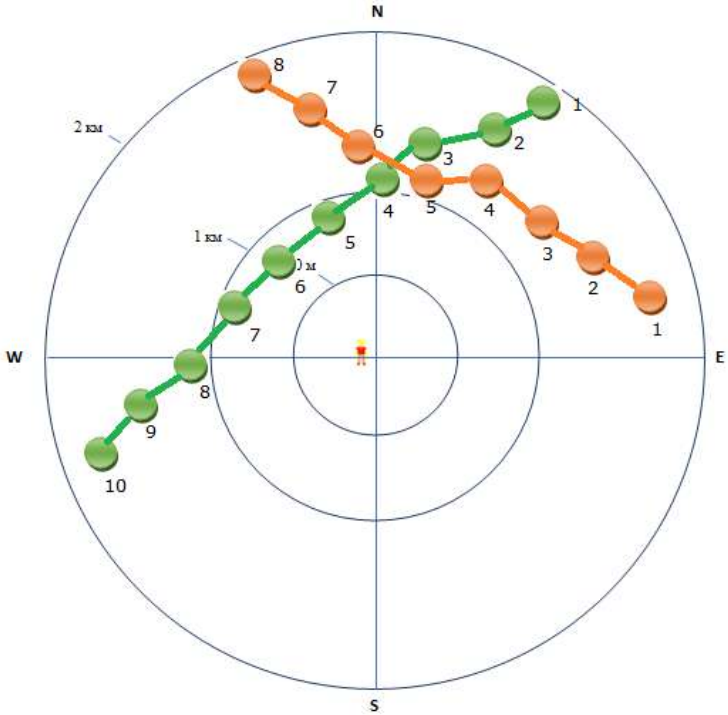


Fig. 74 Flight path (VP 3), 07.08.2020

Table 82 Target species log (VP 3), 07.08.2020

	Gyps fulvus	**15:32**	1 45 m	2 50 m	3 60 m	4 65m	5 75m	6 90m	7 95m	8 95m	9 95m	10 95m
	Neophron percnopterus	**17:48**	1 65 m	2 60 m	3 60 m	4 65m	5 65m	6 60m	7 65m	8 65m		

VP.6

Date:08.08.2020 Start and end time: 8:23 – 11:23
Weather:
The air temperature: start 25 °C end 30 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.5

Date:08.08.2020 Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 32 °C end 34°C is clear
Wind speed approx. (3-5 m/s) No precipitation

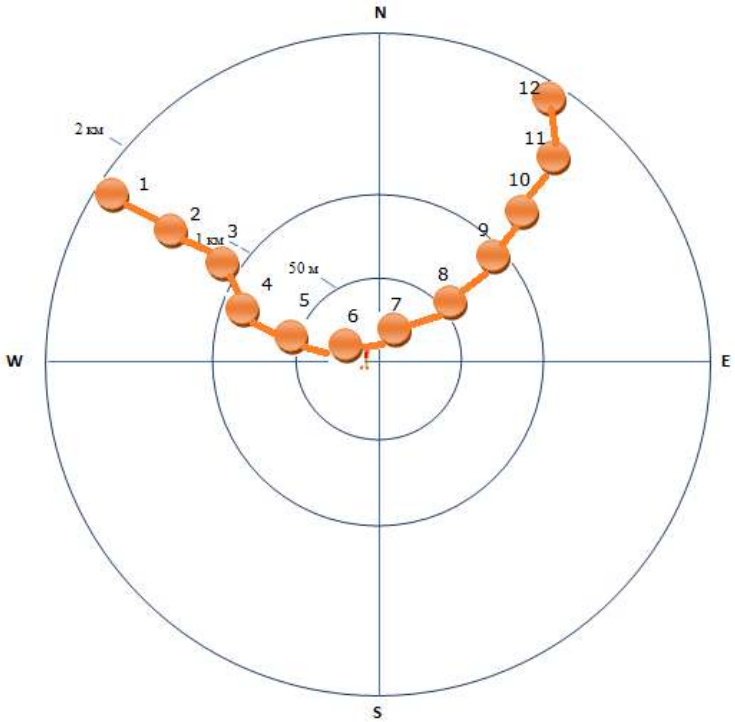


Fig. 75 Flight path (VP 5), 08.08.2020

Table 83 Target species log (VP 5), 08.08.2020

	Neophron percnopterus	**12:05**	1 65 m	2 60 m	3 50 m	4 35m	5 35m	6 20m	7 10 m	8 15 m	9 30m	10 35 m	11 40 m	12 40 m

VP.4

Date: 08.08.2020 Start and end time: 15:28 – 18:28
Weather:
The air temperature: start 34 °C end 31°C is clear
Wind speed approx. (5-7 m/s) No precipitation

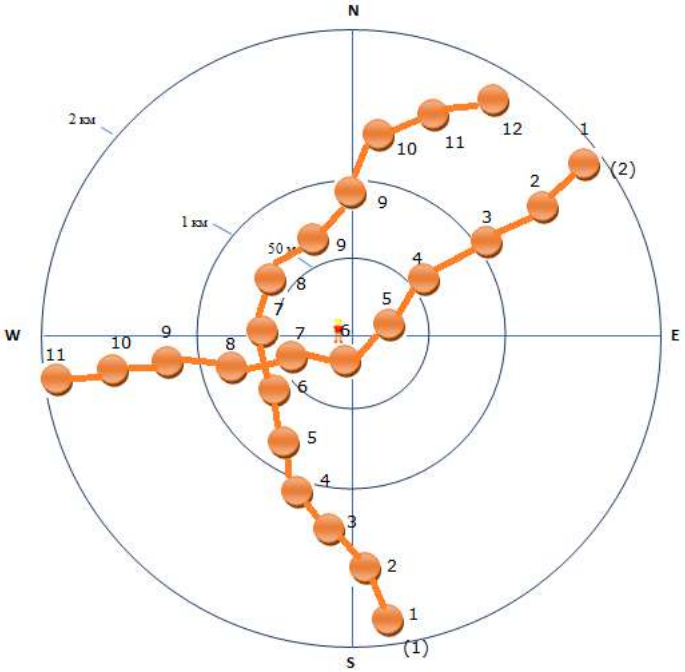


Fig. 76 Flight path (VP 4), 08.08.2020

Table 84 Target species log (VP 4), 08.08.2020

	Neophron ercnopterus(1)	**15:36**	1 50m	2 50m	3 40 m	4 35m	5 30m	6 30m	7 40 m	8 45m	9 50m	10 60m	11 60 m	12 65m
	Neophron Percnopterus(2)	**17:43**	1 50m	2 50m	3 50 m	4 55m	5 50m	6 50m	7 50 m	8 55m	9 50m	10 50m	11 50 m	

VP. 12

Date: 13.08.2020 Start and end time: 8:12 – 11:12
Weather:
The air temperature: start 24 °C end 27°C is clear
Wind speed approx. (6-8 m/s) No precipitation

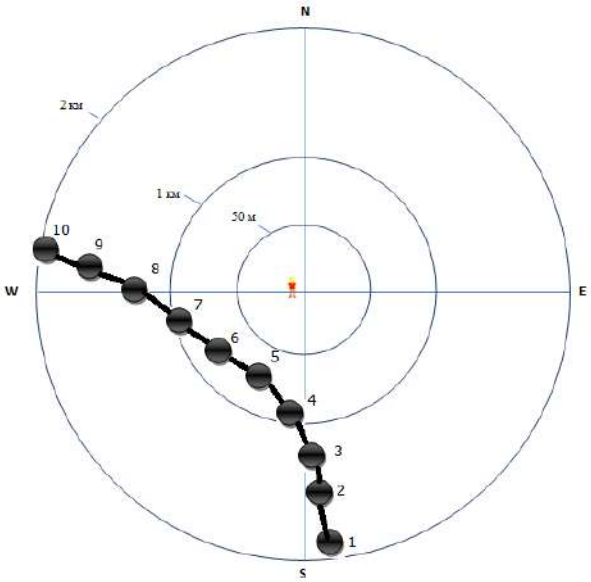


Fig. 77 Flight path (VP 12), 13.08.2020

Table 85 Target species log (VP 12), 13.08.2020

●	*Aquila nipalensis*	**9:45**	1 70m	2 70m	3 70 m	4 75m	5 70m	6 70m	7 70 m	8 75m	9 70m	10 70m

VP. 13

Date: 13.08.2020 Start and end time: 11:47 – 14:47
Weather:
The air temperature: start 32 °C end 34 °C is clear
Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP.14

Date: 13.08.2020 Start and end time: 15:10 – 18:10

Weather:

The air temperature: start 34 °C end 30 °C is clear

Wind speed approx. (8-9 m/s) No precipitation

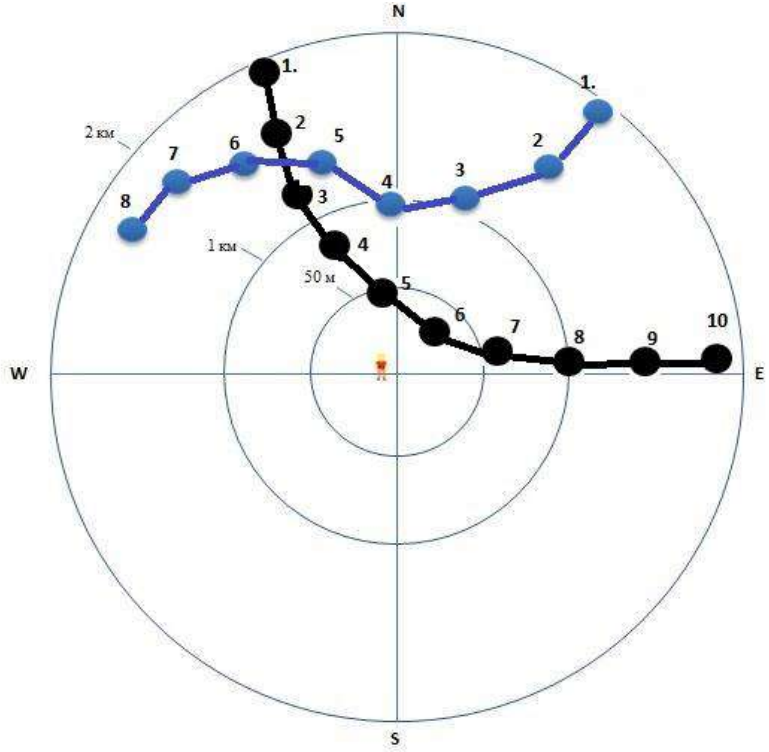


Fig. 78 Flight path (VP 14), 13.06.2020

Table 86 Target species log (VP 14), 13.08.2020

	Aquila nipalensis	**16:29**	1 140 m	2 140 m	3 140 m	4 145 m	5 140 m	6 140 m	7 140 m	8 145 m	9 140 m	10 140 m
	Aegypius monachus	**17:06**	1 160 m	2 160 m	3 160 m	4 165 m	5 160 m	6 160 m	7 160 m	8 165 m		

VP. 1

Date: 14.08.2020 Start and end time: 7:23 – 10:23
Weather:
The air temperature: start 24 °C end 27 °C is clear
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 2

Date: 14.08.2020 Start and end time: 10:56 – 13:56
Weather:
The air temperature: start 29 °C end 32 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

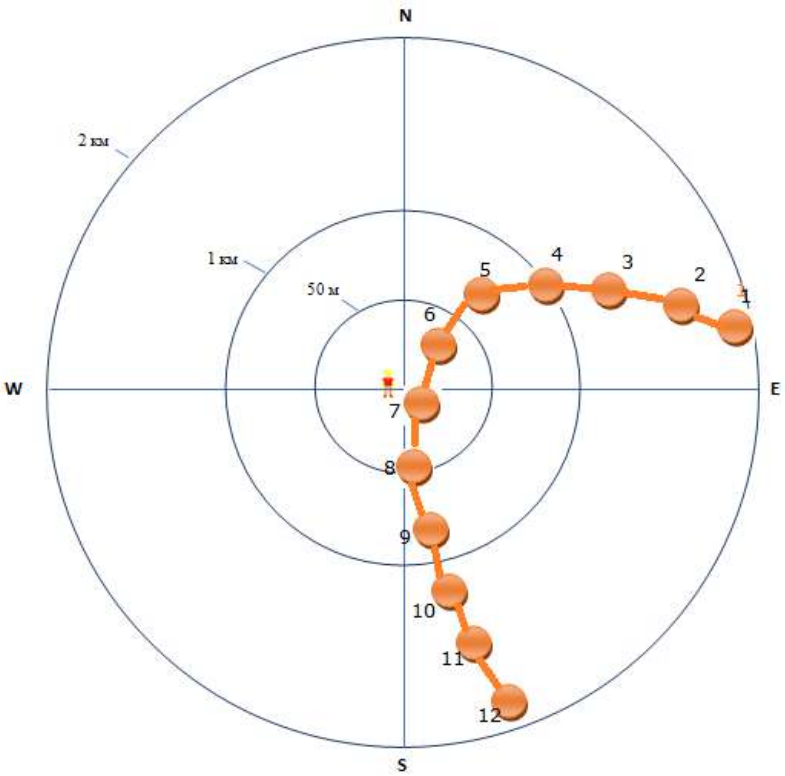


Fig. 79 Flight path (VP 2), 14.08.2020

Table 87 Target species log (VP 2), 14.08.2020

	Neophron Percnopterus	**11:31**	1 90 m	2 90 m	3 80 m	4 70 m	5 70 m	6 60 m	7 55 m	8 55 m	9 60 m	10 60m	11 60 m	12 60 m

VP.3

Date: 14.08.2020 Start and end time: 14:22 – 17:22
Weather:
The air temperature: start 33 °C end 30 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 4

Date: 15.08.2020 Start and end time: 7:26 – 10:26
Weather:
The air temperature: start 23 °C end 29 °C is clear
Wind speed approx. (6-8 m/s) No precipitation

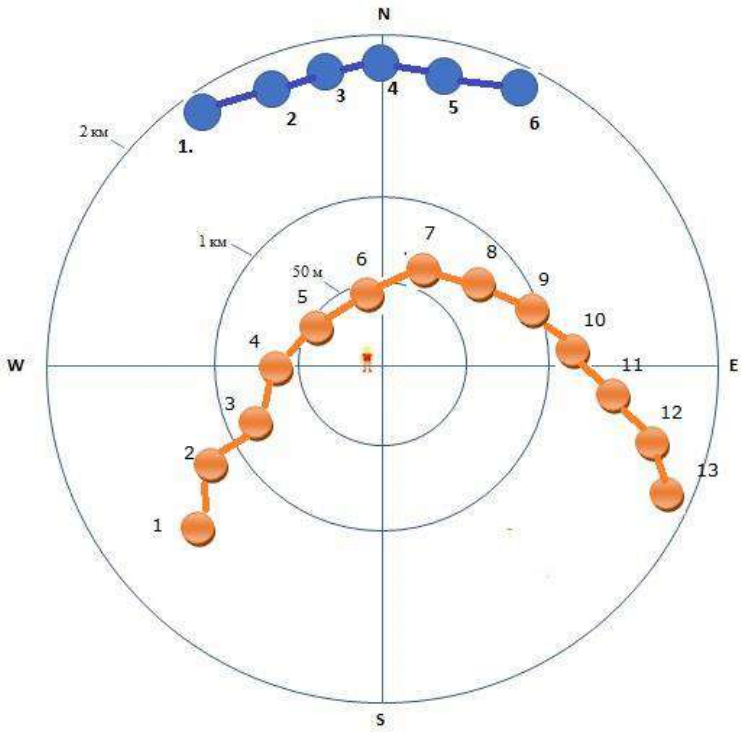


Fig. 80 Flight path (VP 4), 15.08.2020

Table 88 Target species log (VP 4), 15.08.2020

	Neophron percnopterus	**9:21**	1 40 m	2 40 m	3 40 m	4 45 m	5 50 m	6 50 m	7 55 m	8 55 m	9 60 m	10 60 m	11 60 m	12 60 m	13 60 m
	Aegypius monachus	**9:58**	1 60 m	2 60 m	3 60 m	4 60 m	5 60 m	6 60 m							

VP 8

Date:15.08.2020 Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 30 °C end 34 °C is clear
Wind speed approx. (8-10 m/s) No precipitation
Primary species not found

VP. 7

Date:15.08.2020 Start and end time: 15:28 – 18:28
Weather:
The air temperature: start 34 °C end 31 °C is clear
Wind speed approx. (6-7 m/s) No precipitation

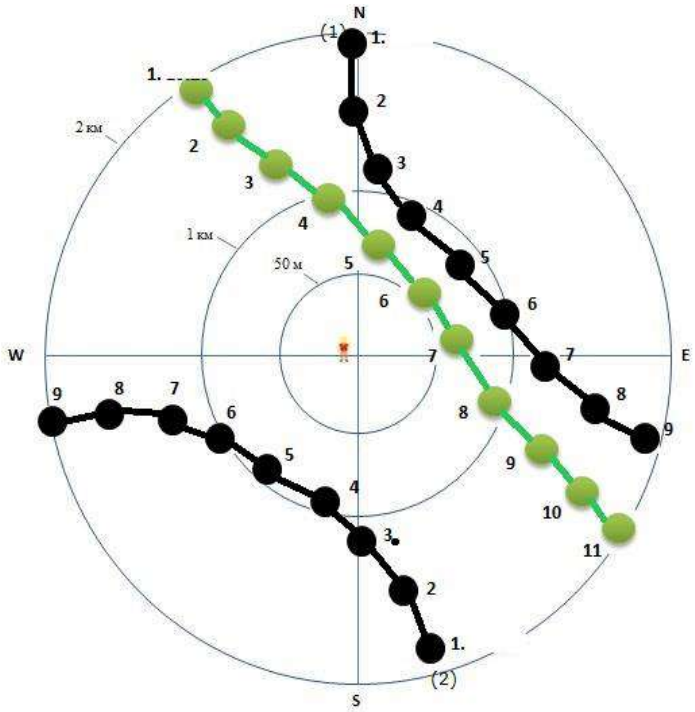


Fig. 81 Flight path (VP 7), 15.08.2020

Table 89 Target species log (VP 7), 15.08.2020

	Aquila nipalensis	**15:36**	1 130m	2 130m	3 130 m	4 135m	5 130m	6 130m	7 130m	8 130m	9 130 m		
	Gyps fulvus	**16:47**	1 160m	2 160m	3 160 m	4 165m	5 160m	6 160m	7 160m	8 160m	9 160 m	10 165m	11 160m
	Aquila nipalensis	**17:58**	1 50m	2 50m	3 50 m	4 55m	5 50m	6 50m	7 50m	8 50m	9 50 m		

VP. 10

Date:16.08.2020 Start and end time: 7:53 – 10:53
Weather:
The air temperature: start 24 °C end 28 °C is clear
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 11

Date: 16.08.2020 Start and end time: 11:25 – 14:25
Weather:
The air temperature: start 30 °C end 34 °C is clear
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 9

Date:16.08.2020 Start and end time: 14:58 – 17:58
Weather:
The air temperature: start 34 °C end 31 °C is clear
Wind speed approx. (8-10 m/s) No precipitation

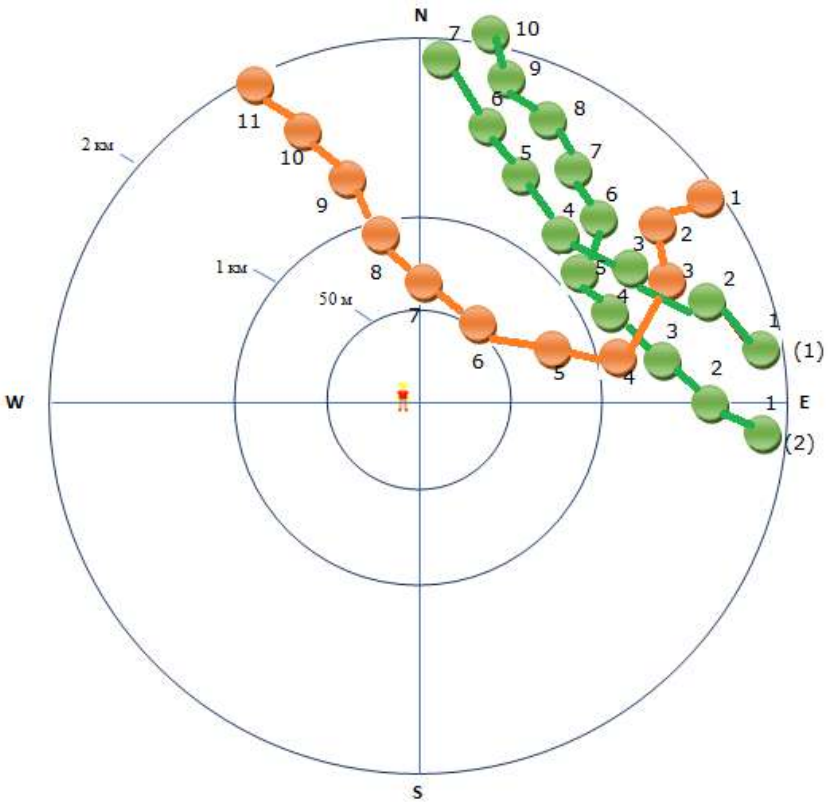


Fig. 82 Flight path (VP 9), 16.08.2020

Table 90 Target species log (VP 9), 16.08.2020

	Gyps fulvus(1)	**17:12**	1 80m	2 80m	3 80 m	4 85m	5 80m	6 80m	7 80m	8 80m	9 80 m	10 85m	
	Gyps fulvus(2)	**17:12**	1 80m	2 80m	3 80 m	4 85m	5 80m	6 80m	7 80m				
	Neophron percnopterus	**17:16**	1 130m	2 130m	3 130 m	4 135m	5 130m	6 130m	7 130m	8 130m	9 130 m	10 135m	11 130m

VP. 4

Date:17.08.2020 Start and end time: 7:46 – 10:46
Weather
The air temperature: start 23 °C end 28 °C is clear
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP. 2

Date: 17.08.2020 Start and end time: 11:18 – 14:18
Weather:
The air temperature: start 31 °C end 33 °C is clear
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 1

Date: 17.08.2020 Start and end time: 14:59 – 17:59

Weather:

The air temperature: start 33 °C end 30 °C is clear

Wind speed approx. (6-8 m/s) No precipitation

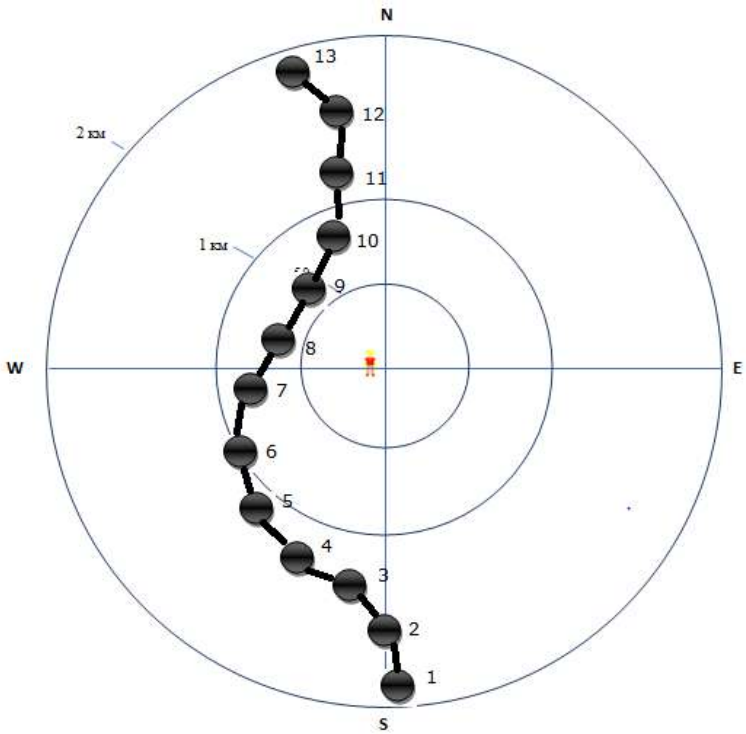


Fig. 83 Flight path (VP 1), 17.08.2020

Table 91 Target species log (VP 1), 17.08.2020

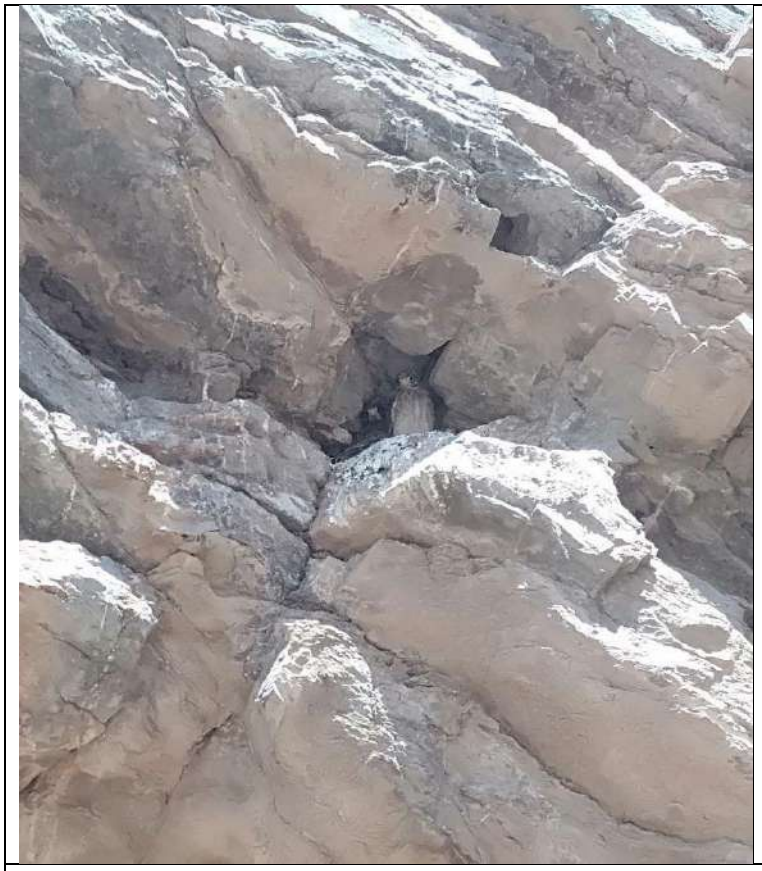
	Aquila nipalensis	**16:13**	1 80m	2 85m	3 80 m	4 85m	5 80m	6 80m	7 80m	8 80m	9 80 m	10 85m	11 85 m	12 80m	13 80m

ATTACHMENTS

Specialized raptor nest survey on the Zarafshan WF project territory.

Nest of a large bird of prey 41°34'34.41"C, 64°30'41.71"B

Empty niches, possible nesting places



Kestrel’s nest 41°33'50.40"C, 64°30'59.40"B
(The nest was located next to the shepherds' yurta)

Specialized raptor nest survey on Aktau Mount IBA

41°41'6.53"C, 64°32'39.23"B	41°40'55.39"C, 64°31'1.59"B
41°39'8.73"C, 64°31'30.50"B	41°39'31.36"C, 64°31'49.58"B
Survey locations	

41°37'40.96"C, 64°30'21.93"B

41°38'57.02"C, 64°30'57.42"B

41°39'18.47"C, 64°30'1.27"B

41°39'49.85"C, 64°31'52.58"B

41°38'37.54"C, 64°30'30.96"B

Nests search locations

Eurasian Griffon	Little Owl	Pied Wheatear
Large predators that sat on the rocks and rose alarmed by us	Steppe Eagle	Chukar Partridge running away from us

Nests of large predators on IBA territory

41°38'43.12"C, 41°38'43.12"C

AUTUMN QUARTERLY BIRD MONITORING REPORT

ZARAFSHAN WIND FARM PROJECT:

CLIENT: WOOD GROUP

Date: December 2020

Juru Energy Ltd.
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This report is prepared by: Juru Energy Date: _____

CHECKED BY _____ Date: _____

APRROVED BY _____ Date: _____

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INTRODUCTION

The Zarafshan Wind Farm Project is being developed by Wood Group. Juru Energy provides local support for ESIA for the Zarafshan Wind Project in Uzbekistan.

In the framework of the Zarafshan Wind Farm Project, bird survey was conducted in the project area in Autumn 2020 (September 01, 2020 – November 15, 2020). The purpose of ornithological monitoring was to conduct systematic field studies at specific vantage points to assess bird species composition that occur within the project's area of influence, its abundance and territorial distribution, the nature of the stay, and daily activity of birds during autumn migration and the beginning of nesting and also to identify birds that are of conservation interest under IUCN and Uzbekistan Redlist.

This report is a statement of work made by Juru Enery` local ornitologists Alisher Atakhodjaev and R.A. Sohibnazarov. However, it should be noted that help in collecting survey material was also provided by the company’s employees, and expedition members.

SURVEY METHODS

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The range of detection and identification of large species as golden eagles was up to 2 km, and small passerines 50 m. Directions and flight altitude were taken into account.

The observations were carried out at 14 Vantage points (Table 2). The number and location of Vantage points for stationary observation in the project area have been agreed with the company employees and international expert. The points are located so as to cover the territory as completely as possible (Fig.1).

The duration of one bird count at each Vantage point (VP) was 3 hours. The total duration of all the observations in the territory was **504 hours** (Table 3).

During observations weather conditions such as wind speed and direction, and air temperature were recorded. Wind speed and air temperature were measured using an anemometer. Whenever possible, the number of species, approximate flight altitude, speed, and flight direction of each target species were recorded every 15 seconds.

During the observations, photographing and short video shooting of birds were carried out, which is used to confirm the correct determination of species and obtain additional data on the number of individuals. Following equipment was used: binoculars (Viking) with 10x zoom; cameras (Nikon P1000, Canon 550D) with 24x and 50x zoom, with focal length of 550 mm and 1200 mm, respectively; field telescope (Viking).

Target and Secondary Species

Target species (shown below) represent the species of greatest sensitivity and/or conservation concern. Those species are the focus of the VP surveys and observations of target species will always take priority over completion of secondary species activity summaries.

List of Bird Families that include Target Species

- Anseriformes – Swans, Geese and Ducks
- Otidiformes – Bustards
- Gruidae – Cranes
- Rallidae – Crakes and Rails
- Phalacrocoracidae - Cormorants
- Pelecanidae – Pelicans
- Ardeidae – Herons, Egrets and Bitterns
- Threskiornithidae – Ibis and Spoonbill
- Ciconiidae – Storks
- Charadriiformes – Waders
- Accipitriformes – Osprey, Eagles, Vultures, Hawks, Buzzards etc.
- Falconidae – Falcons
- Strigiformes - Owls

The Target Species list is based upon current knowledge and is not exhaustive and will be added to as appropriate as further species information is gathered on site and presence of species of particular conservation interest and/or risk from wind farm developments is noted.

In addition to undertaking VP surveys for target species, all other species will be noted on the back of survey forms. Information will include species, number of birds recorded, activity and approximate location in relation to the project area.

List of Bird Families that include Secondary Species

- Laridae – Gulls and Terns
- Strisores – Nightjars and Swifts
- Coraciiformes – Bee-eaters and Rollers
- Sturnidae - Starlings
- Alaudidae – Larks
- Hirundinidae – Swallows and Martins

TERRITORY DESCRIPTION

The territory intended for the construction of the Zarafshan wind farm is located in the South-Western part of Uzbekistan, in the Navoi region, Tamda district (Fig. 1). Aktau mountains located on the northern side of the project area; Azhyrykty village and Tamdy town are in the North-East.

VANTAGE POINTS

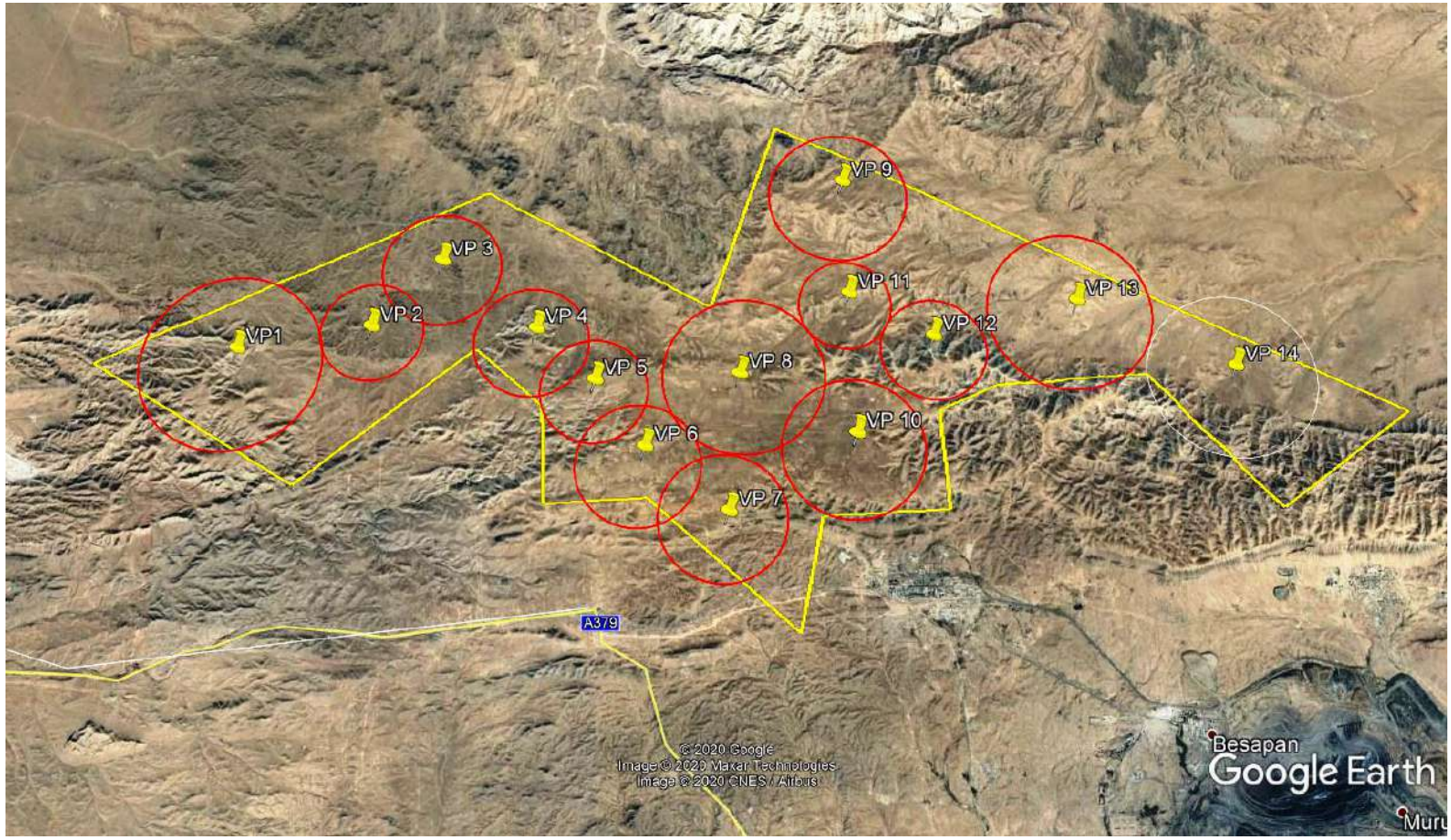


Fig. 1 Vantage Points locations

The number of Vantage Points was agreed with the Client. Points are located so as to cover the project territory as fully as possible. The coordinates of the Vantage Points of Zarafshan are shown in Table 2. The radius of a single observation point is 2 km. Time spent at one point is 3 hours' average.

Table 1 Coordinates of the VPs of Zarafshan project territory

Vantage Points	Coordinates
VP 1	41.582349° 64.319863°
VP 2	41.585587° 64.354108°
VP 3	41.598941° 64.372037°
VP 4	41.583273° 64.396787°
VP 5	41.572261° 64.411438°
VP 6	41.558646° 64.423624°
VP 7	41.545439° 64.443781°
VP 8	41.572008° 64.448397°
VP 9	41.611622° 64.478777°
VP 10	41.559152° 64.476963°
VP 11	41.587621° 64.477994°
VP 12	41.577904° 64.498747°
VP 13	41.584269° 64.537449°
VP 14	41.569329° 64.576066°

Table 2 Total Number of VP survey hours

	VP 1	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	
Total hours															
September hr	21	24	24	24	21	15	9	9	12	15	15	12	12	12	
October hr	9	9	9	9	9	12	21	18	18	15	15	12	12	12	
November hr	6	3	3	3	6	9	6	9	6	6	6	12	12	12	
accounts for Autumn	36	36	36	36	36	36	36	36	36	36	36	36	36	36	**504**

BIRD OBSERVATIONS RESULTS

Table 3 Results of bird observations in September

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle	1,1			2						1,1,1		1,2,2,1		2,1	EN	2 (VU:D)	**NMW**
2.	*Neophron percnopterus*	Egyptian Vulture		1	2,2	1,2	1,1,1	2								2,1	EN	2 (VU:D)	**NMW**
3.	*Aegypius monachus*	Cinereous Vulture		1,1	1,1									1			NT	3 (NT)	R
4.	*Gyps fulvus*	Eurasian Griffon		1	1						1,2,3,2						NT	2 (VU:D)	R
5.	*Gypaetus barbatus*	Lammergeier										1					NT	2 (VU:R)	R
6.	*Falco naumanni*	Lesser Kestrel					2,1										LC	3 (NT)	BM
7.	*Buteo rufinus*	Long-legged Buzzard	1													1	LC	-	**NMW**

8.	*Falco tinnunculus*	Common Kestrel				1		1									LC	-	**NMW**
9.	*Circus cyaneus*	Hen Harrier		1				1									LC	-	**MW**
10.	*Athene noctua*	Little Owl			1						1	1					-	-	R
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	28	16	6					12		7		4		26		-	**R**
2.	*Oenanthe finschii*	Black-necked Wheatear	2	3	4	2	1			2	1	1		3		3		-	**RMW**
3.	*Oenanthe isabellina*	Isabelline Wheatear	7	5	3	4	8	4	5	16	7	1	3	5	5	11		-	**BM**
4.	*Galerida cristata*	Crested Lark	14	12	17	22	6	21	27	32	3	11	25	2	8	6		-	**R**
5.	*Pterocles orientalis*	Black-bellied sandgrouse				6			2								LC	-	**NMW**
6.	*Coracias garrulus*	Eurasian Roller	4	2							2			1			-	-	**NM**
7.	*Merops supercilios*	Blue-cheeked Bee-eater	11	18	3					5							-		**NM**
8.	*Lanius pallidirostris*	Southern grey shrike	1			1		1									-	-	**NM**

9.	*Hirundo rustica*	Barn swallow	17	9	13	13		15	7							2	-	-	**NM**
10.	*Rhodospiza obsoleta*	Black-billed Desert Finch			5	12									18		-	-	**R**
11.	*Calandrella rufescens*	Lesser Short-toed Lark	46	25	14					8	6					30	-	-	**NMW**
12.	*Columba livia*	Rock Dove	35				16										-	-	**R**
13.	*Scotocerca inguieta*	Streaked Scrub Warbler	1	2		4		1		1			5				-	-	**R**
14.	*Muscicapa striata*	Spotted flycatcher	1									1		1			-	-	**NM**
15.	*Upupa epops*	Hoopoe				1											-	-	**NMW**

Note:

R - (residens) settled, W - (wintering) wintering, M - (migrant) migratory, N - nesting species, S - Summer visitor

Table 4 Results of bird observations in October

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle		1		1,1	1			1		1		1,1	1	1,2	EN	2 (VU:D)	**NMW**
2.	*Neophron percnopterus*	Egyptian Vulture						1				1				1	EN	2 (VU:D)	**NMW**
3.	*Aegypius monachus*	Cinereous Vulture		1,1								1		1,1			NT	3 (NT)	R
4.	*Gyps fulvus*	Eurasian Griffon			2						1		2				NT	2 (VU:D)	R
5.	*Gypaetus barbatus*	Lammergeier														1	NT	2 (VU:R)	R
6.	*Buteo rufinus*	Long-legged Buzzard	1								1,1		1,1		1		LC	-	**NMW**
7.	*Buteo buteo*	Common Buzzard				1											LC	-	**MW**
8.	*Circus cyaneus*	Hen Harrier	1	1,1,1				1									LC	-	**MW**
9.	*Falco naumanni*	Lesser Kestrel								1							LC	3 (NT)	BM
10.	*Falco tinnunculus*	Common Kestrel		1,1	1		1	2,1.1		1,1		1					LC	-	**NMW**

11.	*Athene noctua*	Little Owl		1						1,1	1	1	1	1			-	-	R
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	7	6			13	12	18					12	10	28	-	-	**R**
2.	*Corvus ruficollis*	Brown-necked Raven										1			1		-	-	**R**
3.	*Corvus cornix*	Eurasian Hooded Crow		16					5						3	4	-	-	**MW**
4.	*Corvus frugilegus*	Eurasian Rook													6		-	-	**RMW**
5.	*Pica pica*	Magpie														1	-	-	**R**
6.	*Hirundo rustica*	Barn swallow				3							1				-	-	**NM**
7.	*Oenanthe finschii*	Black-necked Wheatear	2	2		2	1		3	1				2		2	-	-	**RMW**
8.	*Oenanthe isabellina*	Isabelline Wheatear	3	2	2	4	2	2	4			1	1	3	2	3	-	-	**BM**
9.	*Pterocles orientalis*	Black-bellied sandgrouse														2	LC	-	**NMW**
10.	*Columba livia*	Rock Dove	11													18	-	-	**R**

11.	*Galerida cristata*	Crested Lark	6	2	5	4	3	2	5	3		3	4	5	4	6	-	-	**R**
12.	*Calandrella rufescens*	Lesser Short-toed Lark				14	15	22	80	45				20			-	-	**NMW**
13.	*Calandrella cinerea*	Red-capped Lark				35	18	86									-	-	**NM**
14.	*Melanocorypha calandra*	Calandra Lark	4	17		3	70	50									-	-	**NMW**
15.	*Turdus atrogularis*	Black-throated Thrush			7												-	-	**MW**
16.	*Phoenicurus ochruros*	Black Redstart			2												-	-	**NM**
17.	*Rhodospiza obsoleta*	Black-billed Desert Finch			22	6	8										-	-	**R**
18.	*Scotocerca inguieta*	Streaked Scrub Warbler			2	1	2								2	2	-	-	**R**
19.	*Fringilla coelebs*	Chaffinch		2	9	5	11	2							3	7	-	-	
20.	*Phylloscopus collybita*	Chiffchaff			1										1		-	-	**MW**

Note:

R - (residens) settled, W - (wintering) wintering, M - (migrant) migratory, N - nesting species, S - Summer visitor

Table 5 Results of bird observations in November

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle												1		1	EN	2 (VU:D)	**NMW**
2.	*Gyps fulvus*	Eurasian Griffon									1						NT	2 (VU:D)	R
3.	*Buteo rufinus*	Long-legged Buzzard		1													LC	-	**NMW**
4.	*Buteo buteo*	Common Buzzard														1	LC	-	**MW**
5.	*Falco tinnunculus*	Common Kestrel						1,1					1		1		LC	-	**NMW**
6.	*Athene noctua*	Little Owl						1					1				-	-	R
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	15	5			7	11	9				15	26	4	6	-	-	**R**

2.	*Corvus ruficollis*	Brown-necked Raven			1										1	2	-	-	**R**
3.	*Corvus cornix*	Eurasian Hooded Crow	6	22	7	2	6		12	4		5	17	13	65	34	-	-	**MW**
4.	*Corvus frugilegus*	Eurasian Rook	14	33	4	12	3		35		3		5	11	16	28	-	-	**RMW**
5.	*Pica pica*	Magpie							2							2	-	-	**R**
6.	*Oenanthe finschii*	Black-necked Wheatear		1	3	2	2	3	2			1		1	2	1	-	-	**RMW**
7.	*Oenanthe isabellina*	Isabelline Wheatear	2	2	4	3	1	1	3	2		3	4	2	3	2	-	-	**BM**
8.	*Columba livia*	Rock Dove	26												8	47	-	-	**R**
9.	*Galerida cristata*	Crested Lark	5	4	8	4	2	3	4	2	2	7	3	8	4	6	-	-	**R**
10.	*Calandrella rufescens*	Lesser Short-toed Lark			12	45	38	80		48							-	-	**NMW**
11.	*Calandrella cinerea*	Red-capped Lark			22	36	18	30			8						-	-	**NM**
12.	*Melanocorypha calandra*	Calandra Lark			12	90	120	80			80	70					-	-	**NMW**
13.	*Turdus atrogularis*	Black-throated Thrush		16	53	30	25										-	-	**MW**
14.	*Rhodospiza obsoleta*	Black-billed Desert Finch			16	8	11	5									-	-	**R**

15.	*Scotocerca inguieta*	Streaked Scrub Warbler			3	3	2	2							1	1	-	-	**R**
16.	*Fringilla coelebs*	Chaffinch		8	11	20	7	16							5	6	-	-	
17.	*Phylloscopus collybita*	Chiffchaff			2	1									1		-	-	**MW**

Note:

R - (residens) settled, W - (wintering) wintering, M - (migrant) migratory, N - nesting species, S - Summer visitor

IBA №UZ010 Aktau Mount SURVEY

On October 21, November 13 and November 21-22, 2020, the Western and Central part of mount Aktau (the territory located North of the Zarafshan project area in Navoi region) was surveyed. The purpose of our work was to search for nests of large birds of prey, as well as to collect information about the autumn avifauna of mount Aktau IBA. Rocks, depressions, holes and cracks on the rocks were examined. Survey was carried out by walking routes. During the survey, 4 nests of large predators were found on the Western side of the mountain (Kanatbay mountain area).

Weather: Sunny, no precipitation, windy, 9-12 m/s, air temperature in October was cool (+14/+16°C), and in November was cold (+0/+4°C).

The survey of Aktau mountain revealed 17 species of birds and 5 species of mammals. Among the bird species the following were noted: *Eurasian Griffon, Golden Eagle, Saker falcon, Steppe Eagle, Kestrel, Lammergeier, Chukar Partridge* and small passerines. Among them the *Eurasian Griffon, Lammergeier, Steppe Eagle, Golden Eagle, Saker falcon* are listed in the Red book of the Republic of Uzbekistan. Vegetation of plants by the end of autumn almost stopped.

There were also traces of overgrazing of livestock on this territory.

During the observations, we also met a few mammal species: 3 individuals of *Goitered Gazelle*; traces and 3 individuals of *Severtsov's (Kyzyl-Kum) Argali*. They grazed in the Central part of Aktau mountain. *Large Souslik* and *Libyan Jird (Gerbil)* were also noted as well as their burrows. Among predatory mammals we found *Fox (Vulpes vulpes karagan)*, as well as their digs, excrement, and traces.

Typical species for this territory are *Griffon Vulture, Common Kestrel, Crested Lark, Lesser Short-toed Lark, Isabelline Wheatear, Chukar Partridge*.

The noted rare bird species (*Eurasian Griffon*, *Lammergeier*, *Steppe Eagle* and *Cinereous Vulture*) are widely distributed both in neighboring territories and in all mountainous regions of Uzbekistan, and the project area is not a key one for them. No additional conservation measures are currently required.

Table 6 List of birds encountered during mount Aktau survey in October and November 2020

№	Latin name	English name	Number in October	Number in November	IUCN status (December 2020)	Uzbekistan Red Book status	Nature of stay
1.	*Gypaetus barbatus*	Bearded Vulture (Lammergeier)	-	2	NT	2 (VU:R)	**R**
2.	*Aquila chrysaetos*	Golden Eagle	-	2	LC		R
3.	*Falco cherrug*	Saker falcon	2	2	EN	1 EN	RW
4.	*Falco tinnunculus*	Common Kestrel	2	4	LC	-	**NMW**
5.	*Aquila nipalensis*	Steppe Eagle	1	4	EN	2 (VU:D)	**NMW**
6.	*Gyps fulvus*	Eurasian Griffon	6	8	LC	2 (VU:D)	**R**
7.	*Haliaeetus albicilla*	White-tailed eagle	-	1	LC		**NMW**
8.	*Aegypius monachus*	Cinereous Vulture	-	2	NT		**R**
9.	*Athene noctua*	Little Owl	4	4	LC	-	**R**
10.	*Galerida cristata*	Crested Lark	16	32	LC	-	**R**
11.	*Calandrella rufescens*	Lesser Short-toed Lark	203	260	LC	-	**NMW**
12.	*Melanocorypha*	Bimaculated Lark	46	32	LC	-	**NM**

	bimaculata						
13.	*Oenanthe isabellina*	Isabelline Wheatear	6	8	LC	-	**NM**
14.	*Oenanthe finschii*	Black-necked Wheatear	2	12	LC	-	**RMW**
15.	*Alectoris chukar*	Chukar Partridge	13	45	LC	-	**R**
16.	*Upupa epops*	Hoopoe	1	0	LC	-	**NMW**
17.	*Fringilla coelebs*	Chaffinch	12	18	LC	-	**MW**

Note: *R – residens, W – wintering, M – migrant, N – Nesting, S – Summer visitor*

Table 7 Mammalian species noted during a visit to Aktau Mount

№	**Latin name**	**English name**	**Number in October**	**Number in November**	**Uzbekistan Red Book status (2019)**
1.	*Gazella subgutturosa*	Goitered Gazelle	-	3	2 (VU:D)
2.	*Ovis ammon severtzovi*	Severtsov's (Kyzyl-Kum) Argali	-	3	2 (VU:D)
3.	*Vulpes vulpes karagan*	Fox	2	2	-
4.	*Meriones libycus*	Libyan Jird (Gerbil)	1		-
5.	*Spermophilus fulvus*	Large Souslik	7	2	-

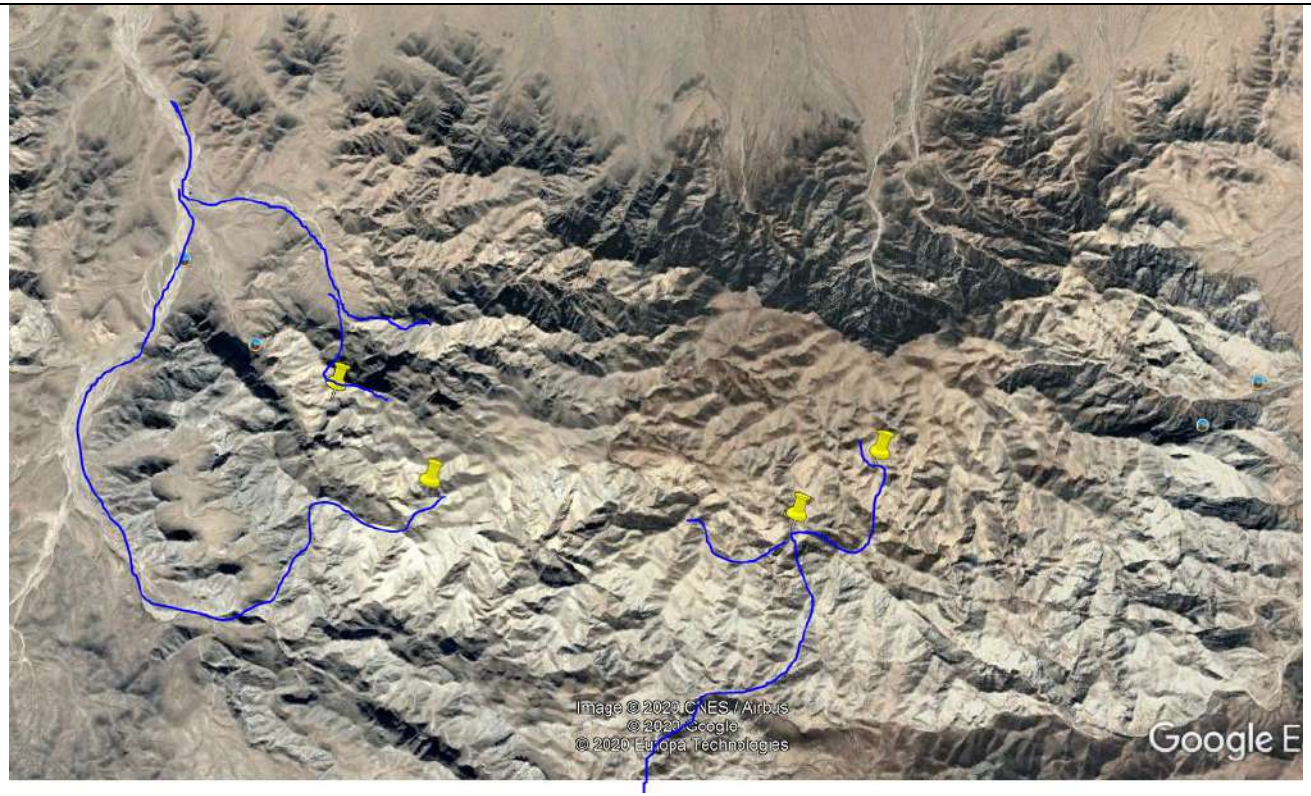


Fig. 2 Survey map. (Placemarks are the locations of predator nests – see Attachments)

CONCLUSIONS

The majority of 460 registered bird species in Uzbekistan (more than 85%) are migratory species; our country is located on the Euro-Asian migration route.

During the year, the composition of the avifauna of the Zarafshan project territory have been chanching. The richest species diversity we observed in July and September, i.e. after nesting and during the early autumn migration. At this time, there were sandpipers making a reverse migration and swallows making a post-nesting migration. The occurrence of large birds of prey in this area is much higher than in other project areas. This is due to the location of the Aktau mountain near the project area, located in the middle of the desert and the low-altitude remnant mountains of Kyzylkum.

Mount Aktau is classified as a key ornithological area (IBA) in Uzbekistan and Central Asia, and is included in the international bird database. The territory where it is planned to create a wind farm in the Navoi region is an ecologically important area for sedentary (local) and migratory birds, because the territory is located within one of the main flyways in Central Asia - the Central Asian Flyway. Located next to the IBA Aktau area, is a resting and nesting place for large birds of prey such as *Eurasian Griffon, Egyptian Vulture, Steppe Eagle, Cinereous Vulture*, and possibly *Golden Eagle*, and naturally they regularly visit the foothills of the plains below where the wind farm is planned.

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. For stationary observations, 14 observation points (VPs) were selected and the total observation time at each point was 36 hours per season. For target species, the flight time, altitude, direction, and travel time were recorded in every 15-second interval. Target species include all Falcons, species included in the IUCN list, species included in the Red Book of Uzbekistan, and all large and soaring bird species. All other bird species and other animals (Reptiles

and Mammals) were also recorded during observations. Additionally, weather conditions were recorded during observations: cloud cover, precipitation, air temperature, wind speed.

Key findings of the autumn bird monitoring:

- The migration corridor is a broad front that includes all of Uzbekistan without narrow corridors.
- The territory of the planned wind farm is located within this wide migration corridor.
- There are several species of migratory birds (such as birds of prey, waterfowl, and cranes) included in the IUCN list and in the Red Book of Uzbekistan, which fly over the project territory during Autumn migration.
- These species may be subject to collisions with wind turbines, depending on various conditions.
- The size of the population of bird species registered in the IUCN list and their exposure to collision is very small compared to the size of their population around the globe. Other anthropogenic factors (such as habitat loss, poaching, etc.) are more important factors that cause harm to this recorded migratory population.
- There was no mass autumn migration of birds over the Zarafshan WF project territory. Most migrating birds probably pass through this region, skirting and not flying over these higher grounds, and we did not observe noticeable bird activity during the entire autumn period.

Reccomendations

We suggest to implement post-construction monitoring to determine where operational curtailment might be necessary to reduce problematic bird mortality rates.

Appendix 1. Weather conditions during VP Summer surveys

Table 8 Weather conditions and visibility in September

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 September												sunny, 3-5 m/s	sunny, 5-6 m/s	sunny, 4-5m/s
2 September									sunny, 8-9 m/s	sunny, 5-6m/s	sunny, 5-6 m/s			
3 September				half cloudy, 7-9 m/s	sunny, 6-8 m/s		sunny, 3-4 m/s							
4 September	cloudy, 6-8 m/s	half cloudy, 5-7 m/s		sunny, 5-6 m/s										
5 September												sunny, 5-6 m/s	sunny, 3-4 m/s	sunny, 6-8 m/s
6 September					sunny, 3-5 m/s					sunny, 5-6 m/s	sunny, 4-5 m/ s			
7 September	partly cloudy, 10-12 m/s	partly cloudy, 6-8 m/s	half cloudy, 8-10m/s											

8 September				sunny, 5-7 m/s	sunny, 3-5 m/s	sunny, 5-6 m/s								
11 September												sunny, 6-8 m/s	sunny, 4-5 m/s	sunny, 8-9 m/s
12 September	half cloudy, 3-5 m/s	half cloudy, 5-6 m/s	half cloudy, 5-6 m/s											
13 September				half cloudy 6-8 m/s			sunny, 6-7 m/s	sunny, 8-10 m/s						
14 September									cloudy. 8-10 m/s	complet ely cloudy 6-8 m/s	complet ely cloudy 6-8 m/s			
15 September	sunny, 6-8 m/s	cloudy, 6-8 m/s		cloudy, 2-4 m/s										
16 September								cloudy, 2-4 m/s	cloudy, 8-10 m/s		complet ely cloudy 7-8 m/s			
17 September	sunny, 5-7 m/s	cloudy, 6-8 m/s	cloudy, 5-6 m/s											
18 September						cloudy, 4-5 m/s	cloudy, 6-7 m/s	cloudy, 2-4 m/s						
19 September		cloudy, 3-4 m/s	sunny, 4-5 m/s	sunny, 3-4 m/s										

20 September												sunny, 3-5 m/s	sunny, 5-6 m/s	sunny, 4-5 m/s
24 September									half cloudy 3-5 m/s	sunny, 4-5 m/s	sunny, 5-6 m/s			
25 September		cloudy, 6-8 m/s		cloudy, 6-7 m/s	sunny, 3-5 m/s									
26 September			cloudy, 8-10 m/s		sunny, 3-5 m/s	sunny, 5-6 m/s								
27 September	sunny, 3-5 m/s		sunny, 5-6 m/s	sunny, 5-7 m/s										
28 September			half cloudy 5-6 m/s		sunny, 3-5 m/s	sunny, 5-6 m/s								
29 September					sunny, 3-5 m/s	sunny, 5-6 m/s				half cloudy 5-7 m/s				
30 September	cloudy 5-7 m/s	cloudy 6-8 m/s	half cloudy 6-7 m/											

Table 9 Weather conditions and visibility in October

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
3 October							sunny, 3-5 m/s	sunny, 3-5 m/s	sunny, 6-7m/s					
4 October												half cloudy, 8-9 m/s	completely cloudy, 5-6 m/s	half cloudy, 5-6 m/s
5 October								cloudy, 6-8 m/s		cloudy, 3-4 m/s	cloudy, 6-8 m/s			
6 October						half cloudy, 5-7 m/s	half cloudy, 7-9 m/s		half cloudy, 5-6 m/s					
7 October												sunny, 5-6 m/s	sunny, 3-4 m/s	sunny, 6-8 m/s
8 October				sunny, 4-5 m/s	half cloudy, 2-4 m/s	sunny, 3-5 m/s								
9 October									half cloudy, 4-6 m/s	half cloudy, 6-8 m/s	half cloudy, 8-10m/s			
13 October	sunny, 3-5 m/s	sunny, 3-5 m/s	sunny, 5-7 m/s											

14 October						sunny, 6-8 m/s	half cloudy, 4-5 m/s	sunny, 6-7 m/s						
15 October									half cloudy, 7-8 m/s	sunny, 5-6 m/s	cloudy, 5-6 m/ s			
16 October				half cloudy, 6-8 m/s	half cloudy, 5-7 m/s		half cloudy, 6-7 m/s							
17 October							completely cloudy, 6-8 m/s	half cloudy, 6-8 m/s	cloudy, 8-10 m/s					
18 October	cloudy, 2-4 m/s	sunny, 6-8 m/s	cloudy, 6-8 m/s											
19 October												half cloudy, 6-8 m/s	cloudy, 8-10 m/s	cloudy, 4-6 m/s
24 October								half cloudy, 6-8 m/s		half cloudy, 5-7 m/s	half cloudy, 5-6 m/s			
25 October					cloudy, 6-7 m/s	cloudy, 4-5 m/s	sunny, 5-7 m/s							
26 October	cloudy, 3-4 m/s	sunny, 3-5 m/s	half cloudy, 5-6 m/s											
27 October												sunny, 4-5 m/s	cloudy, 4-6 m/s	sunny, 4-5 m/s
28 October									half cloudy, 3-4 m/s	half cloudy, 3-5 m/s	cloudy, 3-6 m/s			

29 October				**sunny, 4-6 m/s**			**half cloudy, 2-3 m/s**	**cloudy, 3-5 m/s**						

Table 10 Weather conditions and visibility in November

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 November												cloudy, 3-5 m/s	half cloudy, 5-6 m/s	half cloudy, 5-6 m/s
2 November									cloudy, 5-7 m/s	cloudy, 5-7 m/s	sunny, 4-5 m/s			
3 November						cloudy, 5-6 m/s	half cloudy, 5-7 m/s	half cloudy, 5-6 m/s						
4 November	half cloudy, 6-8 m/s	cloudy, 6-7 m/s	half cloudy, 6-8 m/s											
5 November												half cloudy, 6-8 m/s	half cloudy, 6-8 m/s	half cloudy, 6-8 m/s
6 November					half cloudy, 5-6 m/s	half cloudy, 5-7 m/s		half cloudy, 7-9 m/s						
7 November									cloudy, 4-6 m/s	half cloudy, 5-6 m/s	half cloudy, 3-4 m/s			
10 November												half cloudy, 6-7 m/s	half cloudy, 6-8 m/s	

11 November							completely cloudy 5-6 m/s	completely cloudy 4-6 m/s						
12 November													cold, 4-5 m/s	cold, 6-7 m/s
13 November					half cloudy 6-7 m/s	half cloudy 6-7 m/s s								
14 November												half cloudy 5-6 m/s		half cloudy 3-5 m/s
15 November	cold, 10-12 m/s			cold, 8-9 m/s										

Appendix 2. Vantage Point Data Logs

VP survey results in September

VP. 12

Date: 01.09.2020. Start and end time: 8:36 – 11:36

Weather:

The air temperature: start 23°C end 28°C is clear,

Wind speed approx. (3-5 m/s)

No precipitation

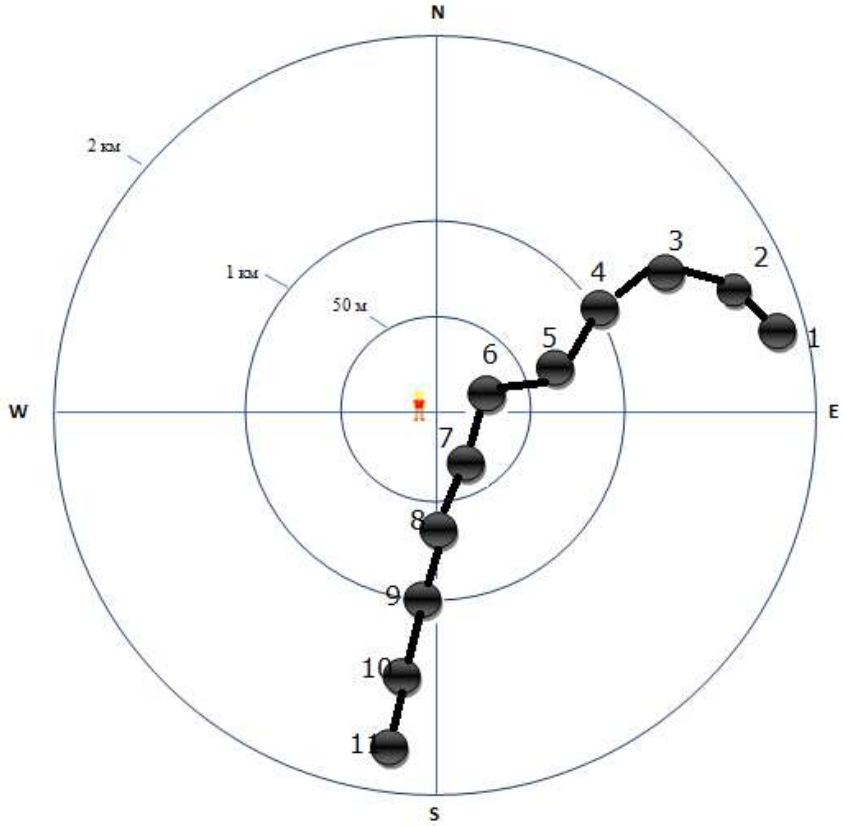


Fig. 3 Flight path (VP 12), 01.09.2020

Table 11 Target species log (VP 12), 01.09.2020

	Aquila nipalensis	**11:05**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90 m	8 95 m	9 95m	10 90 m	11 90 m

VP. 13

Date: 01.09.2020. Start and end time: 11:59 – 14:59
Weather:
The air temperature: start 25°C end 26°C is clear
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 14

Date: 01.09.2020. Start and end time: 15:23 – 18:23

Weather

The air temperature: start 25°C end 23°C

Clear

Wind speed approx. (4-5 m/s)

No precipitation

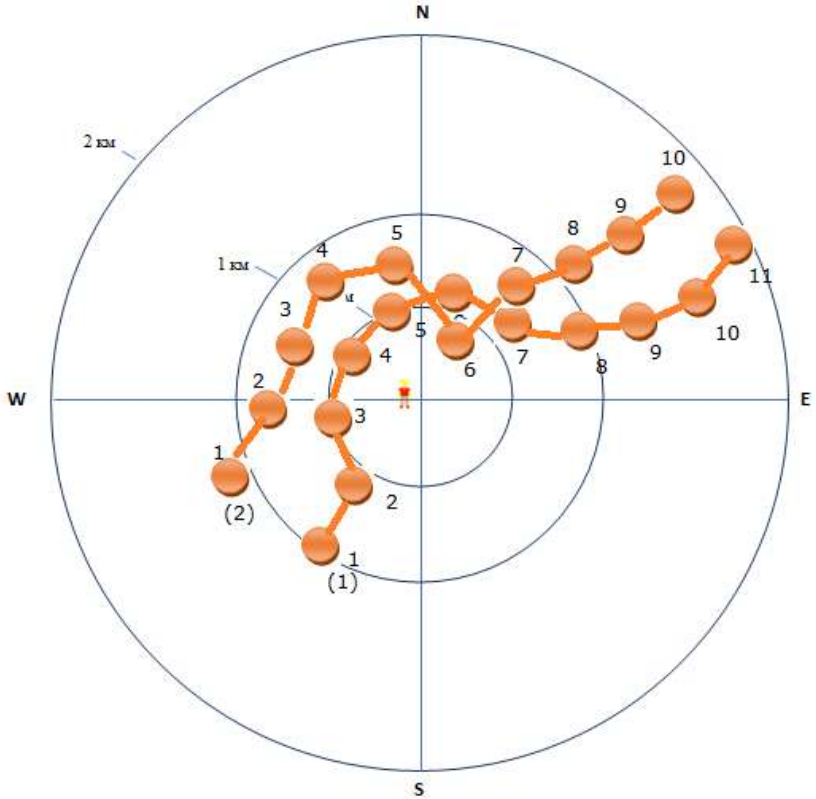


Fig. 4 Flight path (VP 14), 01.09.2020

Table 12 Target species log (VP 14), 01.09.2020

	Neophron percnopterus (1)	**16:32**	1 95m	2 95m	3 90m	4 80m	5 75m	6 75m	7 60m	8 70m	9 90m	10 95m	
	Neophron percnopterus (2)	**16:56**	1 95m	2 95m	3 90m	4 80m	5 75m	6 75m	7 60m	8 70m	9 90m	10 95m	11 95m

VP. 9

Date: 02.09.2020. Start and end time: 7:55 – 10:55

Weather

The air temperature: start 23°C end 26°C

Clear

Wind speed approx. (8-9 m/s)

No precipitation

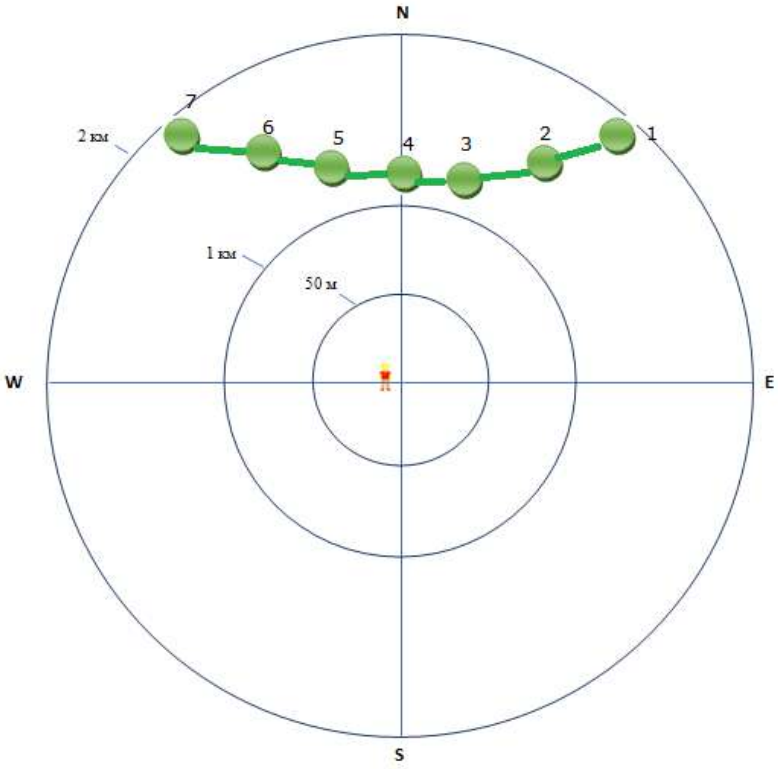


Fig. 5 Flight path (VP 9), 02.09.2020

Table 13 Target species log (VP 9), 02.09.2020

	Gyps fulvus	**10:12**	1 120m	2 125m	3 120m	4 120m	5 125m	6 125m	7 130m

VP.11

Date: 02.09.2020. Start and end time: 11:32 – 14:32
Weather:
The air temperature: start 23°C end 24°C Clear
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.10

Date: 02.09.2020. Start and end time: 15:03– 18:03
Weather:
The air temperature: start 23°C end 21°C Clear
Wind speed approx. (5-6 m/s) No precipitation

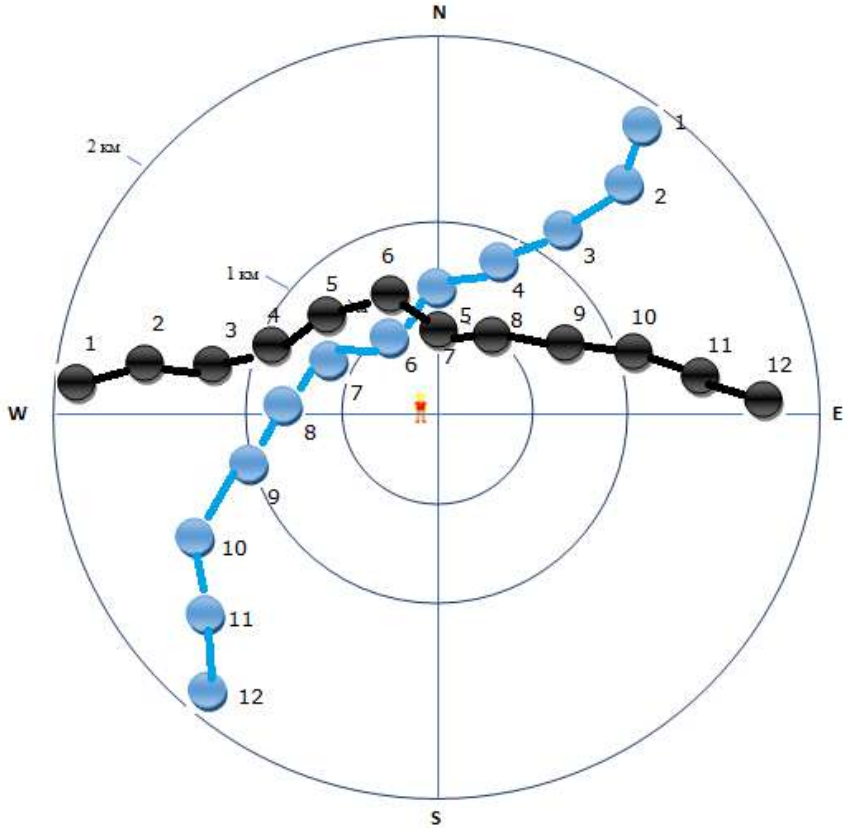


Fig. 6 Flight path (VP 10), 02.09.2020

Table 14 Target species log (VP 10), 02.09.2020

	Aquila nipalensis	**17:23**	1 75m	2 75m	3 70m	4 70m	5 75m	6 75m	7 70m	8 70 m	9 70 m	10 70 m	11 75 m	12 75 m
	Gypaetus barbatus	**17:52**	1 120m	2 120m	3 120m	4 120m	5 120 m	6 120m	7 120m	8 120m	9 120m	10 120m	11 120m	12 120m

VP. 7

Date: 03.09.2020. Start and end time: 7:34 – 10:34
Weather:
The air temperature: start 19°C end 23°C Clear
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 5

Date: 03.09.2020. Start and end time: 11:09 – 14:09
Weather:
The air temperature: start 23°C end 25°C Clear
Wind speed approx. (6-8m/s) No precipitation
Primary species not found

VP. 4

Date: 03.09.2020. Start and end time: 14:59 – 17:59

Weather:

The air temperature: start 25°C end 21°C sky half cloudy

Wind speed approx. (7-9 m/s) No precipitation

Primary species not found

VP.1

Date: 04.09.2020. Start and end time: 8:16 – 11:16
Weather:
The air temperature: start 19°C end 22°C cloudy.
Wind speed approx. (6-8 m/s) No precipitation

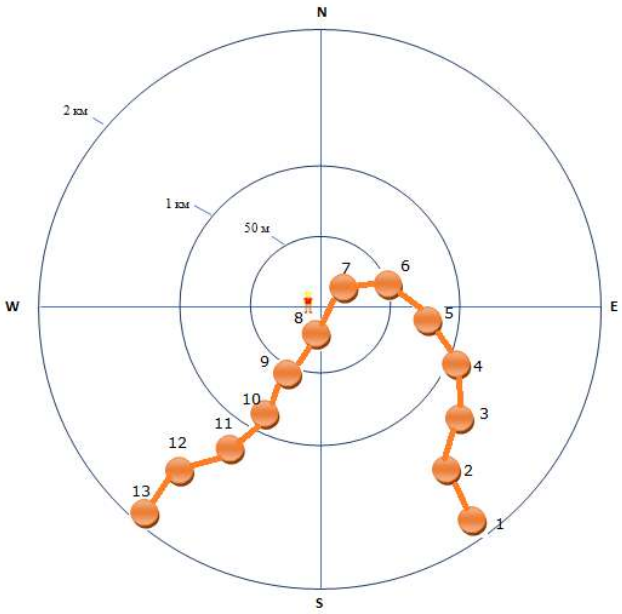


Fig. 7 Flight path (VP 1), 04.09.2020

Table 15 Target species log (VP 1), 04.09.2020

	Buteo rufinus	**9:29**	1 40m	2 40m	3 45m	4 45m	5 45m	6 50m	7 50m	8 50m	9 45m	10 45m	11 50m	12 50m	13 50m

VP. 2

Date: 04.09.2020. Start and end time: 11:49 – 14:49

Weather:

The air temperature: start 22°C end 21°C sky half cloudy

Wind speed approx. (5-7m/s) No precipitation

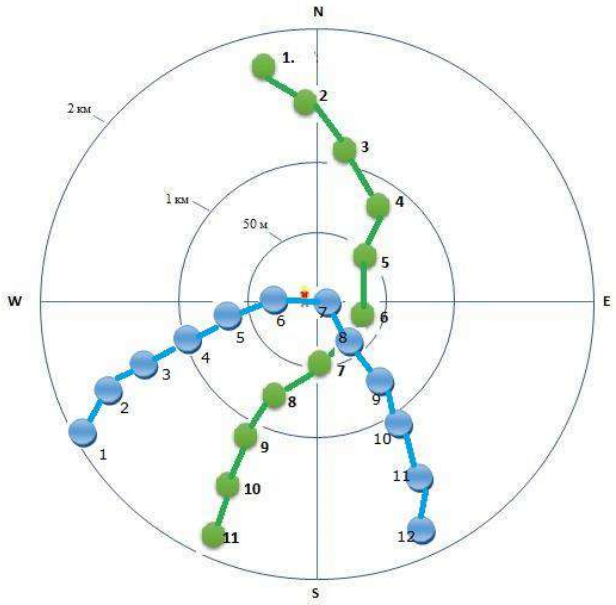


Fig. 8 Flight path (VP 2), 04.09.2020

Table 16 Target species log (VP 2), 04.09.2020

	Gyps fulvus	**13:09**	1 90m	2 90m	3 90m	4 95m	5 95m	6 90m	7 95m	8 95m	9 90m	10 90m	11 90m	
	Aegypius monachus	**13:56**	1 120m	2 110m	3 120m	4 125m	5 125m	6 130m	7 125m	8 135m	9 130m	10 130m	11 130m	12 130m

VP.4

Date:04.09.2020. Start and end time: 15:13– 18:13
Weather:
The air temperature:start 23°C end 20°C is clear.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date:05.09.2020. Start and end time: 7:48 – 10:53
Weather:
The air temperature: start 18°C end 23°C is clear
Wind speed approx. (5-6 m/s) No precipitation

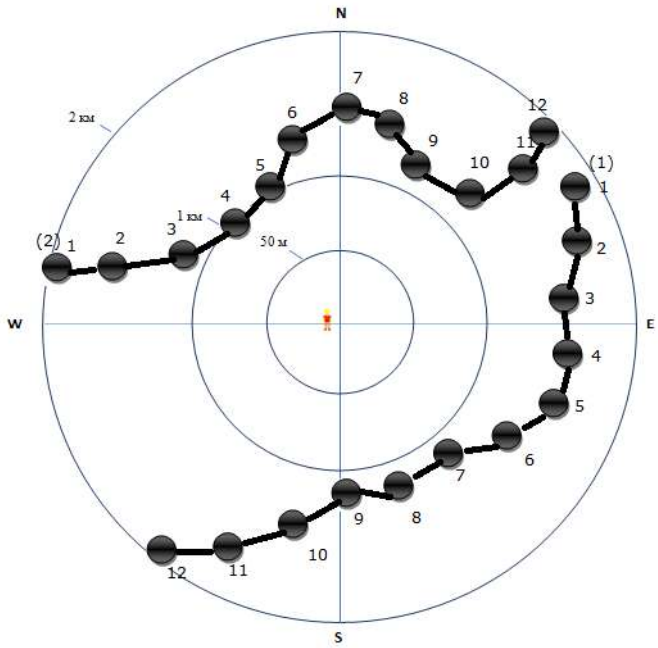


Fig. 9 Flight path (VP 12), 05.09.2020

Table 17 Target species log (VP 12), 05.09.2020

	Aquila nipalensis (1)	**9:28**	1 0m	2 5m	3 10m	4 15m	5 15m	6 20m	7 25m	8 25m	9 70m	10 70m	11 70m	12 70m
	Aquila nipalensis (2)	**10:36**	1 75m	2 65m	3 60m	4 55m	5 55m	6 60m	7 75m	8 95m	9 90m	10 90m	11 100m	12 100m

VP. 13

Date:05.09.2020. Start and end time: 11:26 – 14:26
Weather:
The air temperature: start 22°C end 26°C is clear
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 14

Date: 05.09.2020. Start and end time: 14:56 – 17:56
Weather:
The air temperature: start 27°C end 23°C is clear
Wind speed approx. (6-8 m/s) No precipitation

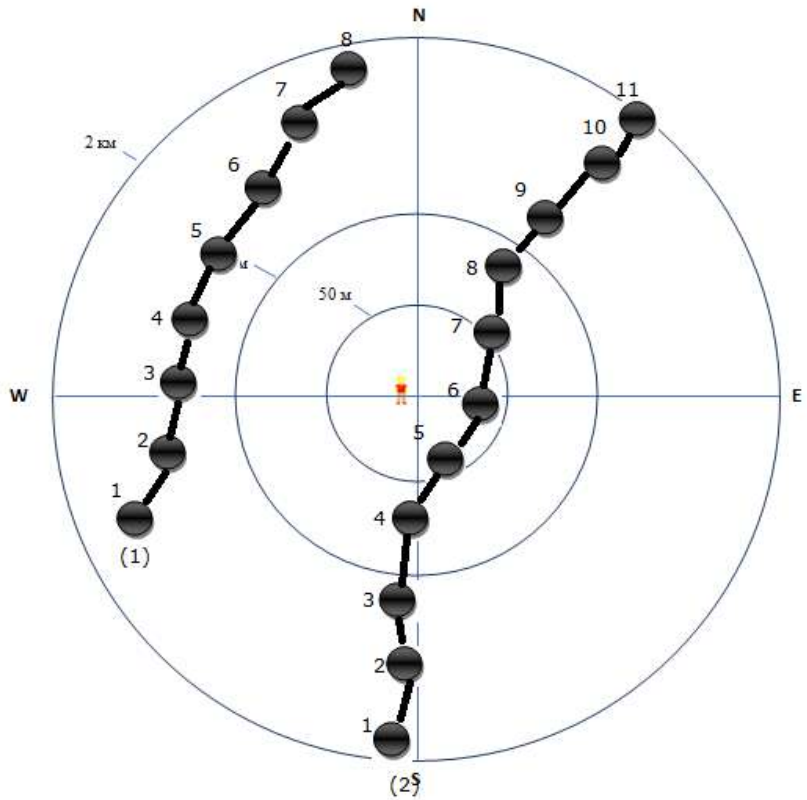


Fig. 10 Flight path (VP 14), 05.09.2020

Table 18 Target species log (VP 14), 05.09.2020

	Aquila nipalensis (1)	**14:28**	1 90m	2 95m	3 100m	4 105m	5 105m	6 100m	7 115m	8 115m	9 120m	10 120m	11 120m
	Aquila nipalensis (2)	**16:36**	1 95m	2 95m	3 90m	4 95m	5 95m	6 90m	7 95m	8 95m			

VP.10

Date: 06.09.2020. Start and end time: 7:42 – 10:42
Weather:
The air temperature: start 18°C end 22°C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 11

Date: 06.09.2020. Start and end time: 11:16 – 14:16
Weather:
The air temperature: start 22°C end 26°C is clear
Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP. 5

Date: 06.09.2020. Start and end time: 15:15 – 18:15
Weather:
The air temperature: start 26°C end 24 °C is clear
Wind speed approx. (3-5 m/s) No precipitation

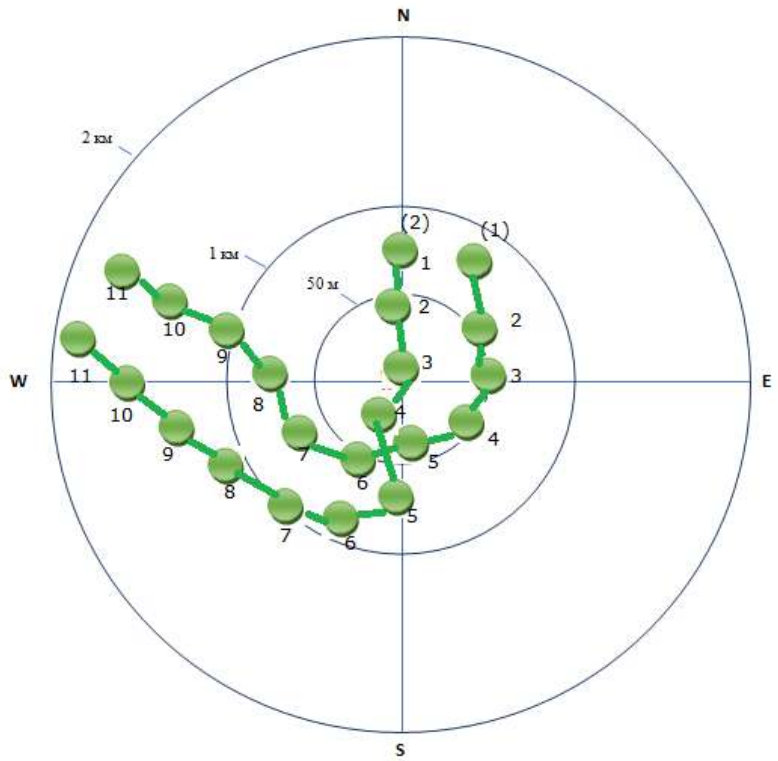


Fig. 11 Flight path(VP 5), 06.09.2020

Table 19 Target species log (VP 5), 06.09.2020

	Falco naumanni (1)	**16:21**	1 35m	2 35m	3 50m	4 55m	5 45m	6 30m	7 35m	8 35m	9 30m	10 50m	11 50m
	Falco naumanni (2)	**16:23**	1 35m	2 35m	3 50m	4 55m	5 45m	6 30m	7 35m	8 35m	9 30m	10 50m	11 50m

VP. 1

Date: 07.09.2020. Start and end time: 7:47 – 10:50
Weather:
The air temperature: start 19 °C end 23 °C partly cloudy
Wind speed approx. (10-12 m/s) No precipitation

Primary species not found

VP. 2

Date: 07.09.2020. Start and end time:11:23 – 14:23
Weather:
The air temperature: start 23 °C end 24 °C partly cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.3

Date: 07.09.2020. Start and end time: 15:21 – 18:21

Weather:

The air temperature: start 24 °C end 21 °C sky half cloudy

Wind speed approx. (8-10 m/s) No precipitation

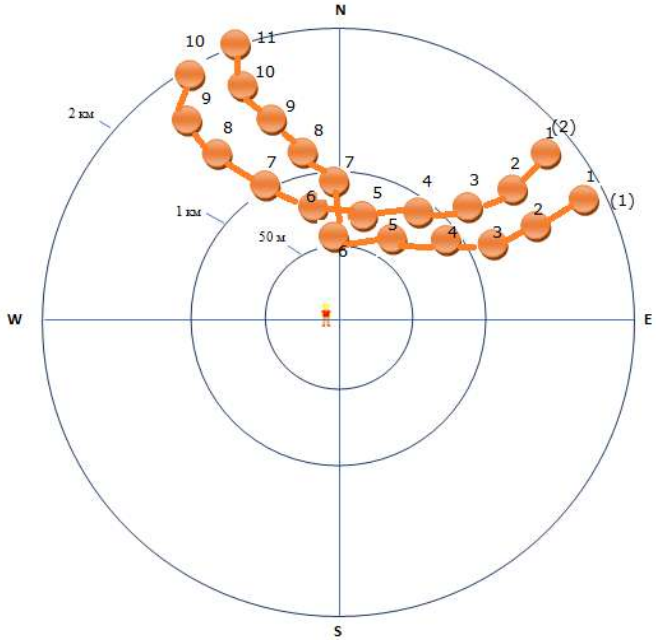


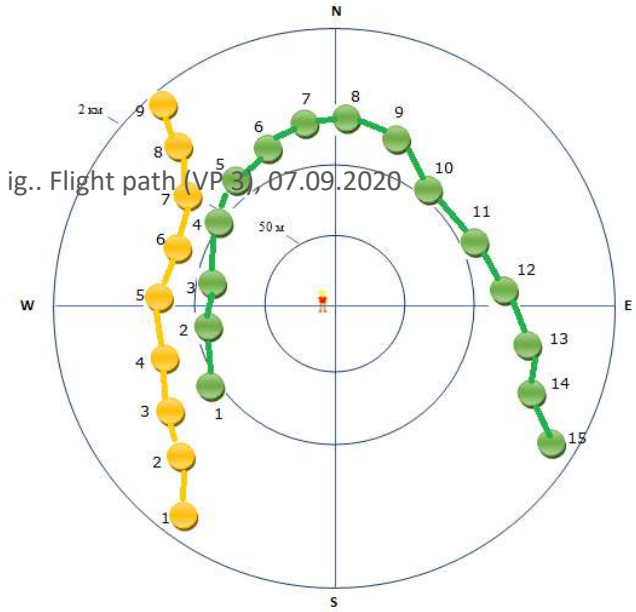
Fig. 12 Flight path (VP 3), 07.09.2020

Table 20 Target species log (VP 3), 07.09.2020

	Neophron percnopterus	**15:40**	1 45m	2 50m	3 60m	4 65m	5 75m	6 90m	7 95m	8 95m	9 95m	10 95m	11 95m
	Neophron percnopterus	**15:42**	1 45m	2 50m	3 60m	4 65m	5 75m	6 90m	7 95m	8 95m	9 95m	10 95m	

VP.6

Date:08.09.2020. Start and end time: 8:23 – 11:23
Weather:
The air temperature: start 22 °C end 24 °C is clear
Wind speed approx. (5-6 m/s) No precipitation



ig.. Flight path (VP 3), 07.09.2020

Fig. 13 Flight path (VP 6), 08.09.2020

Table 21 Target species log (VP 6), 08.09.2020

	Falco tinnunculus	**9:21**	1 25m	2 30m	3 30m	4 35m	5 35m	6 30m	7 25m	8 25m	9 25m	10 25m	11 25m	12 30m	13 30m	14 35m	15 35m
	Circus cyaneus	**10:32**	1 35m	2 30m	3 30m	4 25m	5 25m	6 20m	7 15m	8 15m	9 15m						

VP.5

Date:08.09.2020. Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 24 °C end 27°C is clear
Wind speed approx. (3-5 m/s) No precipitation

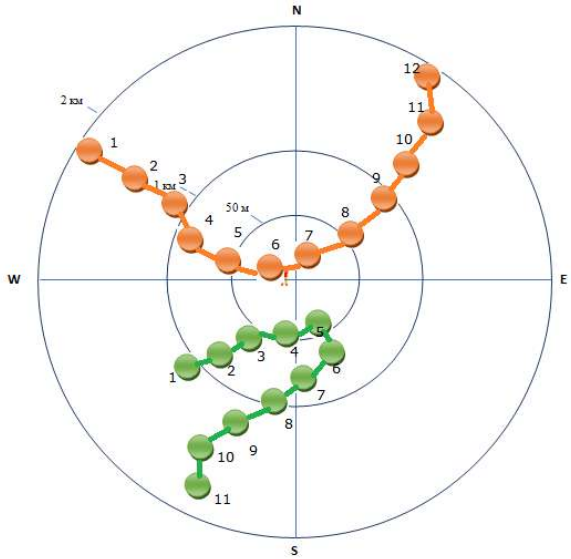


Fig. 14 Flight path (VP 5), 08.09.2020

Table 22 Target species log (VP 5), 08.09.2020

	Neophron percnopterus	**12:05**	1 65m	2 60m	3 50m	4 35m	5 35m	6 20m	7 10m	8 15m	9 30m	10 35m	11 40m	12 40m
	Falco naumanni	**13:16**	1 15m	2 20m	3 20m	4 25m	5 25m	6 30m	7 30m	8 35m	9 30m	10 35m	11 40m	

VP.4

Date: 08.09.2020. Start and end time: 15:28 – 18:28
Weather:
The air temperature: start 27°C end 23°C is clear
Wind speed approx. (5-7 m/s) No precipitation

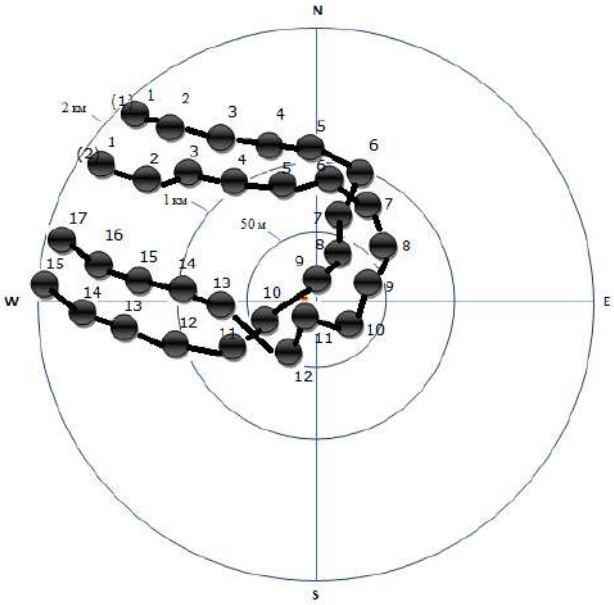


Fig. 15 Flight path (VP 4), 08.09.2020

Table 23 Target species log (VP 4), 08.09.2020

	Aquila nipalensis(1)	**16:36**	1 90m	2 90m	3 90 m	4 95m	5 90m	6 90m	7 90m	8 95m	9 90m	10 90m	11 90m	12 95m	13 90m	14 95m	15 90m	16 90m	17 90m
	Aquila nipalensis(2)	**16:37**	1 90m	2 90m	3 90m	4 95m	5 90m	6 90m	7 90m	8 95m	9 90m	10 90m	11 90m	12 95m	13 90m	14 95m	15 90m		

VP. 12

Date: 11.09.2020. Start and end time: 8:12 – 11:12

Weather:

The air temperature: start 18°C end 24°C is clear

Wind speed approx. (6-8 m/s) No precipitation

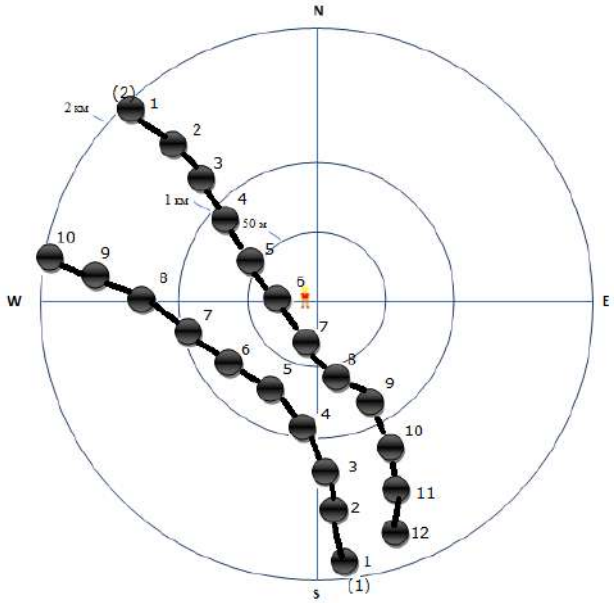


Fig. 16 Flight path (VP 12), 11.09.2020

Table 24 Target species log (VP 12), 11.09.2020

	Aquila nipalensis(1)	**9:45**	1 100m	2 100m	3 100m	4 105m	5 100m	6 100m	7 100m	8 105m	9 100m	10 100m		
	Aquila nipalensis(2)	**11:17**	1 130m	2 130m	3 130m	4 135m	5 130m	6 130m	7 130m	8 135m	9 130m	10 130m	11 100m	12 100m

VP. 13

Date: 11.09.2020. Start and end time: 11:47 – 14:47
Weather:
The air temperature: start 23 °C end 25 °C is clear
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP.14

Date: 11.09.2020. Start and end time: 15:10 – 18:10

Weather:

The air temperature: start 26 °C end 23 °C is clear

Wind speed approx. (8-9 m/s) No precipitation

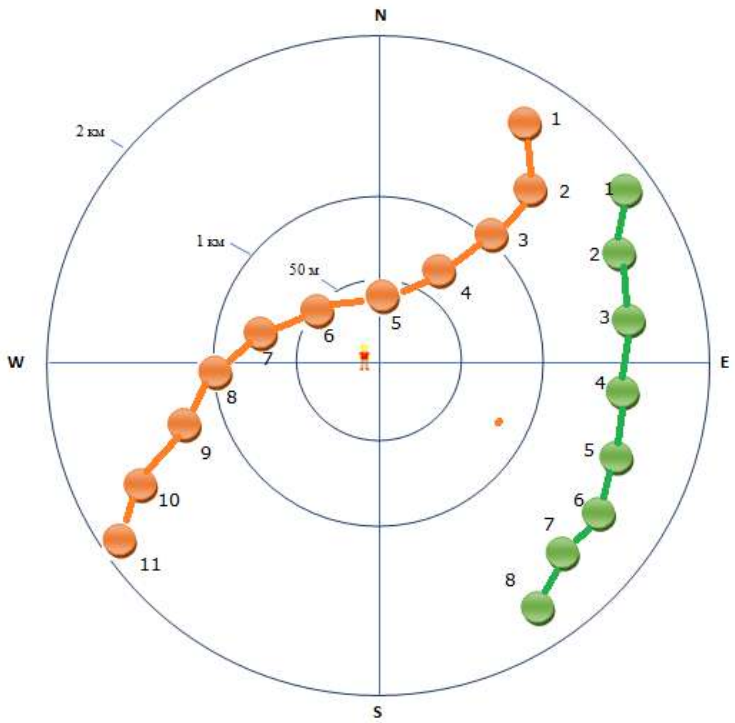


Fig. 17 Flight path (VP 14), 11.09.2020

Table 25 Target species log (VP 14), 11.09.2020

	Neophron percnopterus	**16:29**	1 90m	2 90m	3 90m	4 95m	5 90m	6 90m	7 90m	8 95m	9 90m	10 90m	11 90m
	Buteo rufinus	**15:52**	1 40m	2 40m	3 40m	4 35m	5 40m	6 40m	7 40m	8 45m			

VP. 1

Date: 12.09.2020. Start and end time: 7:23 – 10:23
Weather:
The air temperature: start 18 °C end 22 °C is sky half cloudy
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 2

Date: 12.09.2020. Start and end time: 10:56 – 13:56
Weather:
The air temperature: start 22 °C end 25 °C is sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation

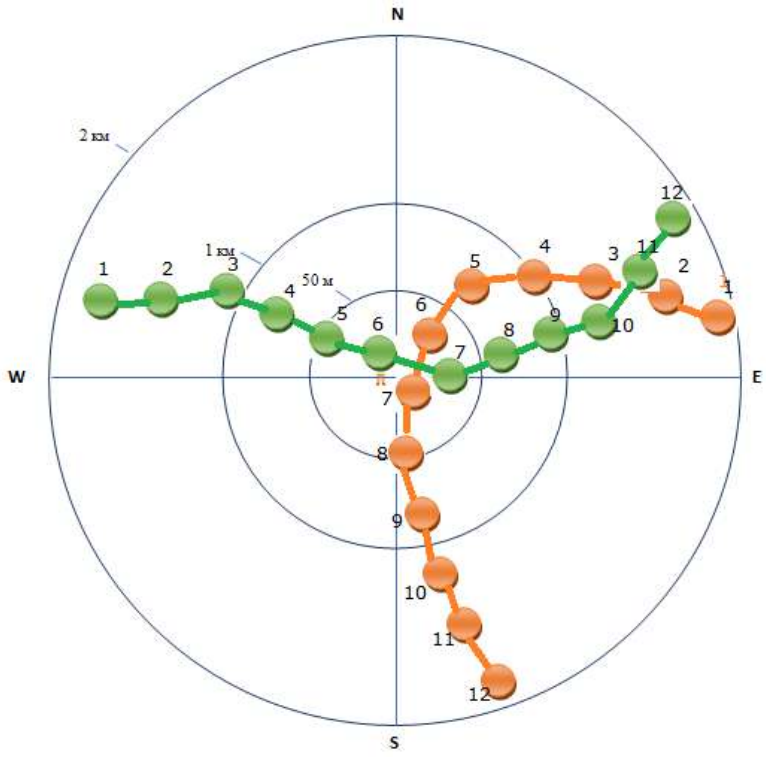


Fig. 18 Flight path (VP 2), 12.09.2020

Table 26 Target species log (VP 2), 12.09.2020

	Neophron Percnopterus	**11:31**	1 90m	2 90m	3 80m	4 70m	5 70m	6 60m	7 55m	8 55m	9 60m	10 60m	11 60m	12 60m
	Aegypius monachus	**13:04**	1 170m	2 190m	3 180m	4 170m	5 170m	6 160m	7 155m	8 155m	9 160m	10 160m	11 160m	12 160m

VP.3

Date: 12.09.2020. Start and end time: 14:22 – 17:22
Weather:
The air temperature: start 26 °C end 22 °C is sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 4

Date: 13.09.2020. Start and end time: 7:26 – 10:26
Weather:
The air temperature: start 19 °C end 21 °C is sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation

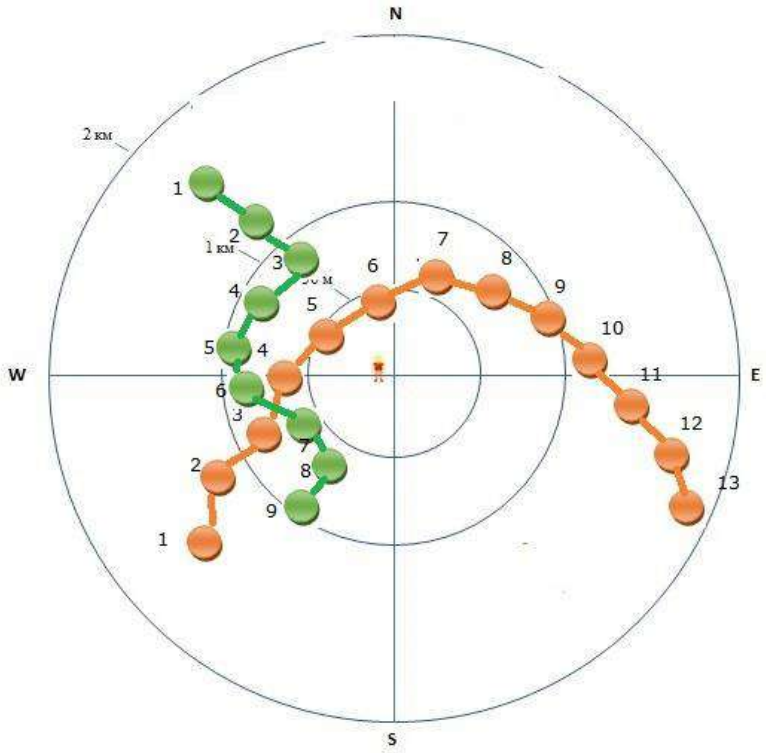


Fig. 19 Flight path (VP 4), 13.09.2020

Table 27 Target species log (VP 4), 13.09.2020

	Neophron percnopterus	**9:21**	1 40m	2 40m	3 40m	4 45m	5 50m	6 50m	7 55m	8 55m	9 60m	10 60m	11 60m	12 60m	13 60m
	Falco tinnunculus	**10:02**	1 10m	2 10m	3 20m	4 25m	5 20m	6 30m	7 35m	8 35m	9 30m				

VP 8

Date: 13.09.2020. Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 23 °C end 25 °C is clear
Wind speed approx. (8-10 m/s) No precipitation
Primary species not found

VP. 7

Date: 13.09.2020. Start and end time: 15:28 – 18:28

Weather:

The air temperature: start 25 °C end 22 °C is clear

Wind speed approx. (6-7 m/s) No precipitation

Primary species not found

VP. 10

Date:14.09.2020. Start and end time: 7:53 – 10:53

Weather:

The air temperature: start 18 °C end 19 °C is sky completely cloudy

Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP. 11

Date: 14.09.2020. Start and end time: 11:25 – 14:25
Weather:
The air temperature: start 20 °C end 22 °C is sky completely cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 9

Date: 14.09.2020. Start and end time: 14:58 – 17:58

Weather:

The air temperature: start 24 °C end 21 °C is cloudy.

Wind speed approx. (8-10 m/s) No precipitation

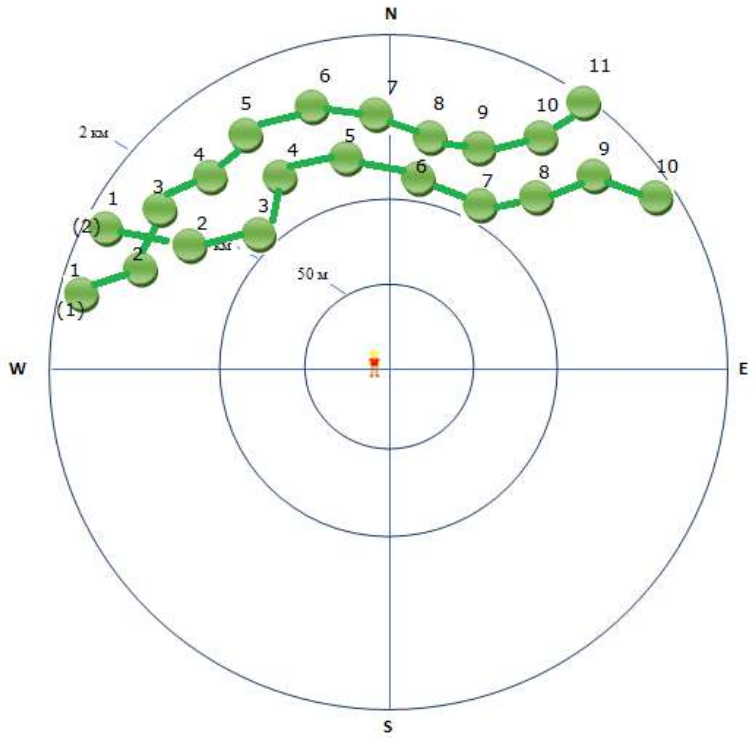


Fig. 20 Flight path (VP 9), 14.09.2020

Table 28 Target species log (VP 9), 14.09.2020

	Gyps fulvus(1)	**16:42**	1 80m	2 80m	3 80m	4 85m	5 80m	6 80m	7 80m	8 80m	9 80m	10 85m	11 80m
	Gyps fulvus(2)	**16:46**	1 80m	2 80m	3 80m	4 85m	5 80m	6 80m	7 80m	8 80m	9 80m	10 85m	

VP. 4

Date:15.09.2020. Start and end time: 7:46 – 10:46

Weather

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 2

Date: 15.09.2020. Start and end time: 11:18 – 14:18

Weather:

The air temperature: start 22 °C end 23 °C is cloudy.

Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP. 1

Date: 15.09.2020. Start and end time: 14:59 – 17:59

Weather:

The air temperature: start 23 °C end 21 °C is clear

Wind speed approx. (6-8 m/s) No precipitation

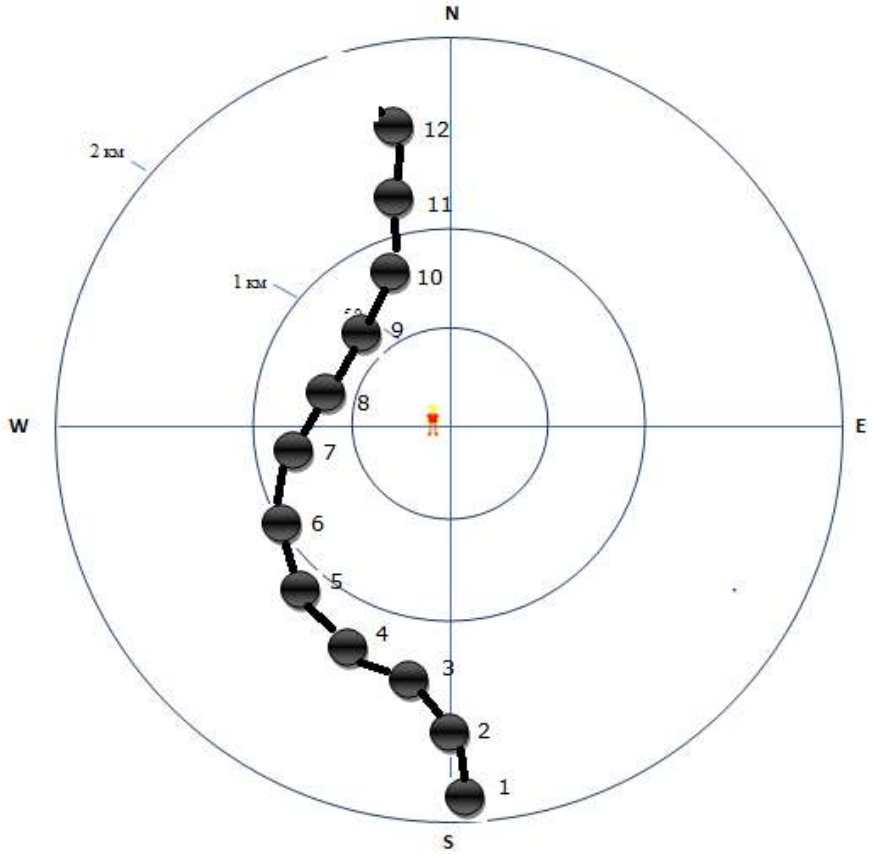


Fig. 21 Flight path (VP 1), 15.09.2020

Table 29 Target species log(VP 1), 15.09.2020

	Aquila nipalensis	**15:43**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 120m	10 125m	11 125m	12 125m

VP. 11

Date: 16.09.2020. Start and end time: 8:25 – 11:25
Weather:
The air temperature: start 18 °C end 22 °C is sky completely cloudy
Wind speed approx. (7-8 m/s) No precipitation
Primary species not found

VP. 9

Date: 16.09.2020. Start and end time: 11:58 – 14:58

Weather:

The air temperature: start 26 °C end 27 °C is cloudy.

Wind speed approx. (8-10 m/s) No precipitation

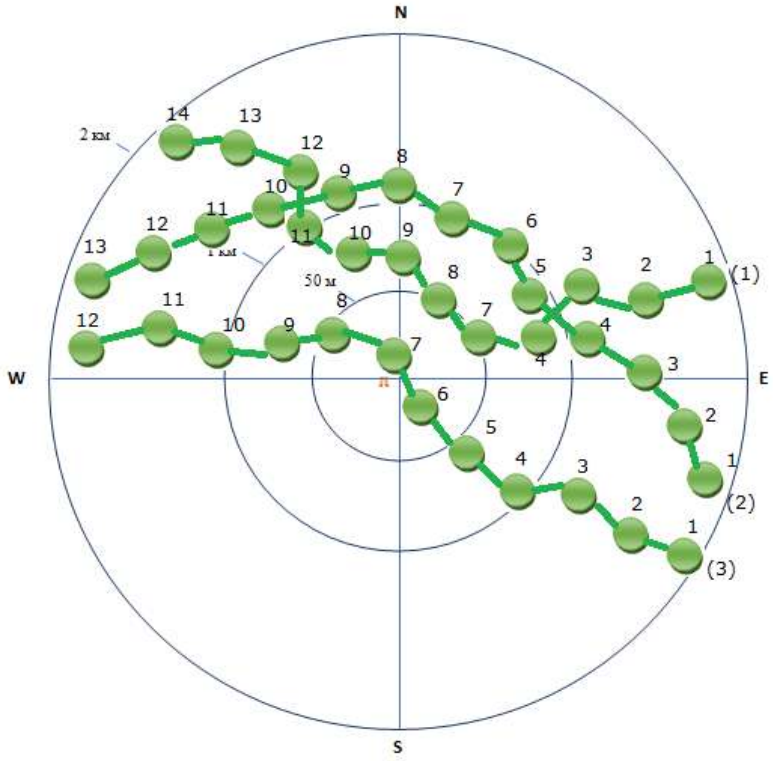


Fig. 22 Flight path (VP 9), 16.09.2020

Table 30 Target species log (VP 9), 16.09.2020

	Gyps fulvus(1)	**13:32**	1 180m	2 180m	3 180m	4 185m	5 180m	6 180m	7 180m	8 180m	9 180m	10 185m	11 180m	12 180m	13 180m	14 185m
	Gyps fulvus(2)	**13:34**	1 180m	2 180m	3 180m	4 185m	5 180m	6 180m	7 180m	8 180m	9 180m	10 185m	11 180m	12 180m	13 180m	
	Gyps fulvus(3)	**14:10**	1 180m	2 180m	3 180m	4 185m	5 180m	6 180m	7 180m	8 180m	9 180m	10 185m	11 180m	12 180m		

VP. 8

Date:16.09.2020. Start and end time: 15:46 – 18:46

Weather

The air temperature: start 26 °C end 22 °C is cloudy.

Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 2

Date: 17.09.2020. Start and end time: 8:18 – 11:18

Weather:

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP.3

Date: 17.09.2020. Start and end time: 11:48 – 14:58
Weather:
The air temperature: start 19 °C end 22 °C is cloudy.
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 1

Date: 17.09.2020. Start and end time: 15:29 – 18:29

Weather:

The air temperature: start 23 °C end 26 °C is clear

Wind speed approx. (5-7 m/s) No precipitation

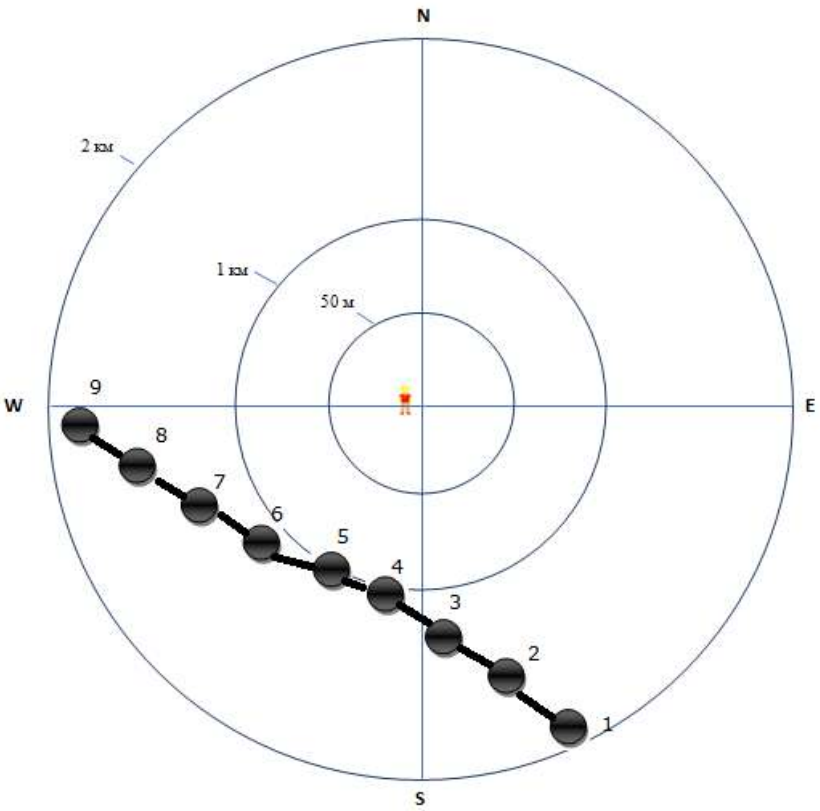


Fig. 23 Flight path (VP 1), 17.09.2020

Table 31 Target species log (VP 1), 17.09.2020

	Aquila nipalensis	**17:13**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 120m

VP. 7

Date: 18.09.2020. Start and end time: 8:22 – 11:22
Weather:
The air temperature: start 18 °C end 22 °C is cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 6

Date: 18.09.2020. Start and end time: 11:57 – 14:57

Weather:

The air temperature: start 24 °C end 27 °C is cloudy.

Wind speed approx. (4-5 m/s) No precipitation

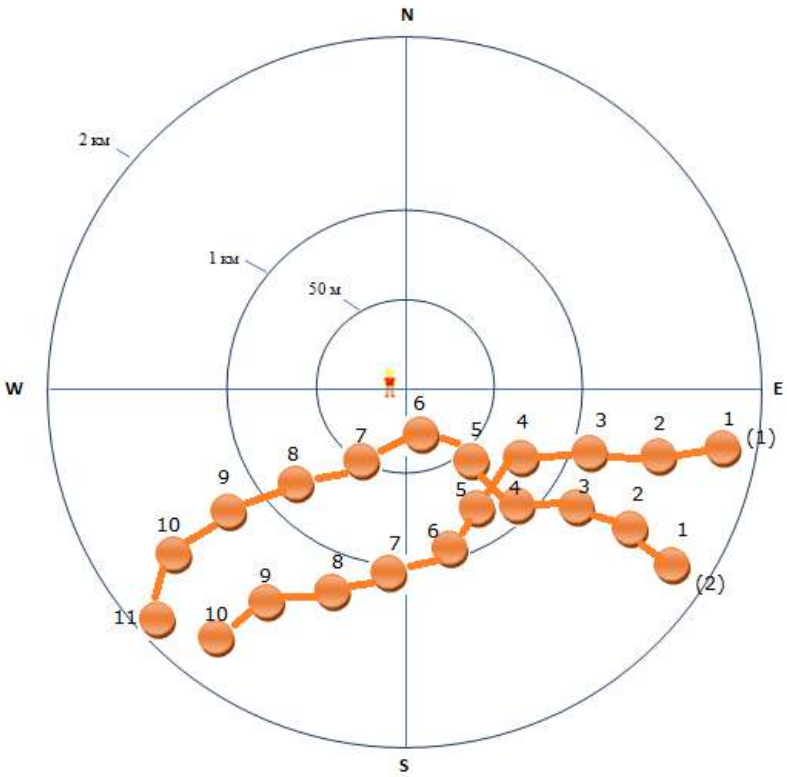


Fig. 24 Flight path (VP 6), 18.09.2020

Table 32 Target species log (VP 6), 18.09.2020

	Neophron percnopterus(1)	**12:38**	1 120m	2 120m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 120m	10 125m	11 120m
	Neophron percnopterus(2)	**12:42**	1 120m	2 120m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 120m	10 125m	

VP. 8

Date:18.09.2020. Start and end time: 15:46 – 18:46

Weather

The air temperature: start 26 °C end 22 °C is cloudy.

Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 2

Date: 19.09.2020. Start and end time: 8:28 – 11:28

Weather:

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (3-4 m/s) No precipitation

Primary species not found

VP. 3

Date: 19.09.2020. Start and end time: 11:59 – 14:59

Weather:

The air temperature: start 23 °C end 26 °C is clear

Wind speed approx. (5-7 m/s) No precipitation

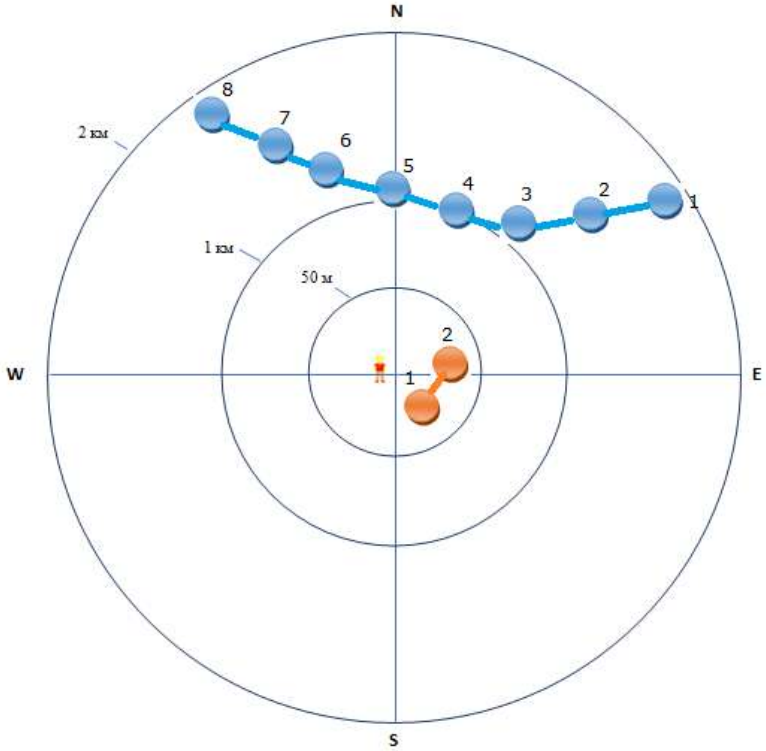


Fig. 25 Flight path (VP 3), 19.09.2020

Table 33 Target species log(VP 3), 19.09.2020

	Aegypius monachus	**12:36**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m
	Athene noctua	**14:48**	1 2 m	2 0 m						

VP. 4

Date: 19.09.2020. Start and end time: 15:28 – 18:28

Weather:

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (3-4 m/s) No precipitation

Primary species not found

VP. 12

Date: 20.09.2020. Start and end time: 8:16 – 11:16

Weather:

The air temperature: start 19°C end 23°C is clear,

Wind speed approx. (3-5 m/s)

No precipitation

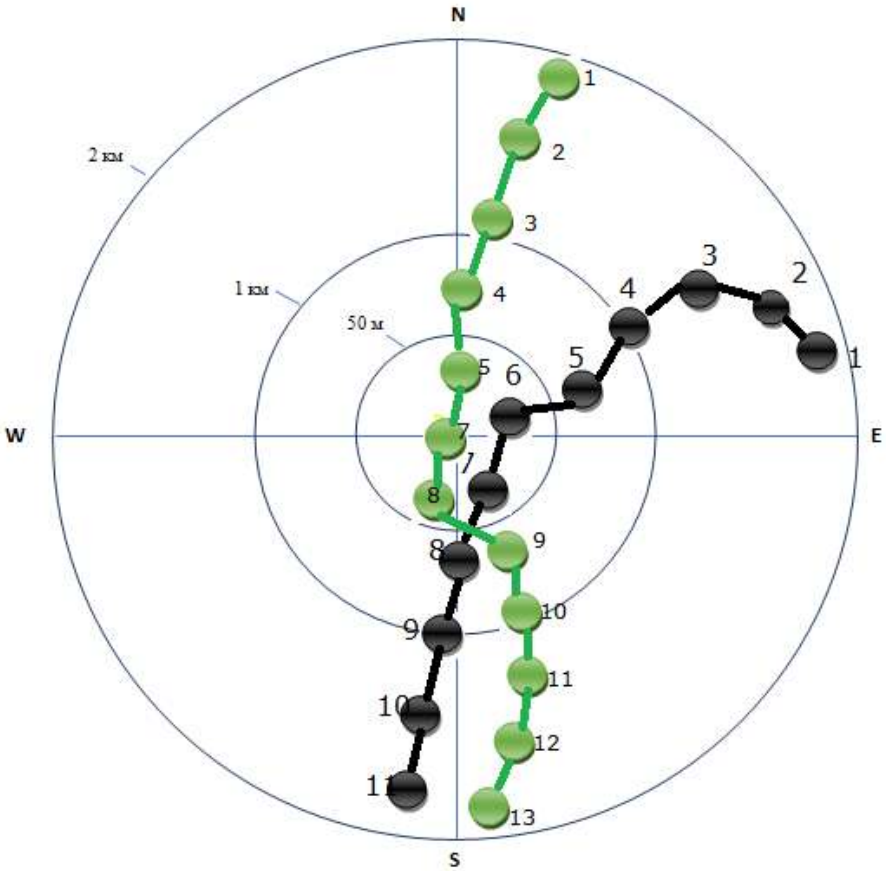


Fig. 26 Flight path (VP 12), 20.09.2020

Table 34 Target species log (VP 12), 20.09.2020

	Aquila nipalensis	**9:33**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90m	8 95m	9 95m	10 90m	11 90m		
	Aegypius monachus	**11:05**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90m	8 95m	9 95m	10 90m	11 120m	12 120m	13 120m

VP. 13

Date: 20.09.2020. Start and end time: 11:48 – 14:48
Weather:
The air temperature: start 25°C end 26°C is clear
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 14

Date: 20.09.2020. Start and end time: 15:16 – 18:16

Weather

The air temperature: start 25°C end 23°C is clear.

Wind speed approx. (4-5 m/s)

No precipitation

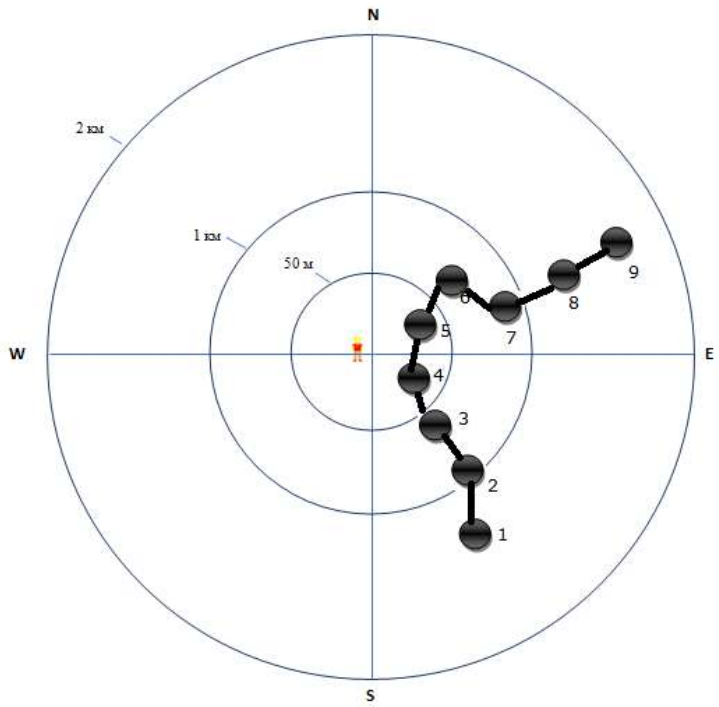


Fig. 27 Flight path (VP 14), 20.09.2020

Table 35 Target species log (VP 14), 20.09.2020

	Aquila nipalensis	**17:12**	1 95m	2 95m	3 90m	4 80m	5 75m	6 75m	7 60m	8 70m	9 90m

VP. 9

Date: 24.09.2020. Start and end time: 7:56 – 10:56

Weather

The air temperature: start 23°C end 26°C Sky half cloudy

Wind speed approx. (3-6 m/s)

No precipitation

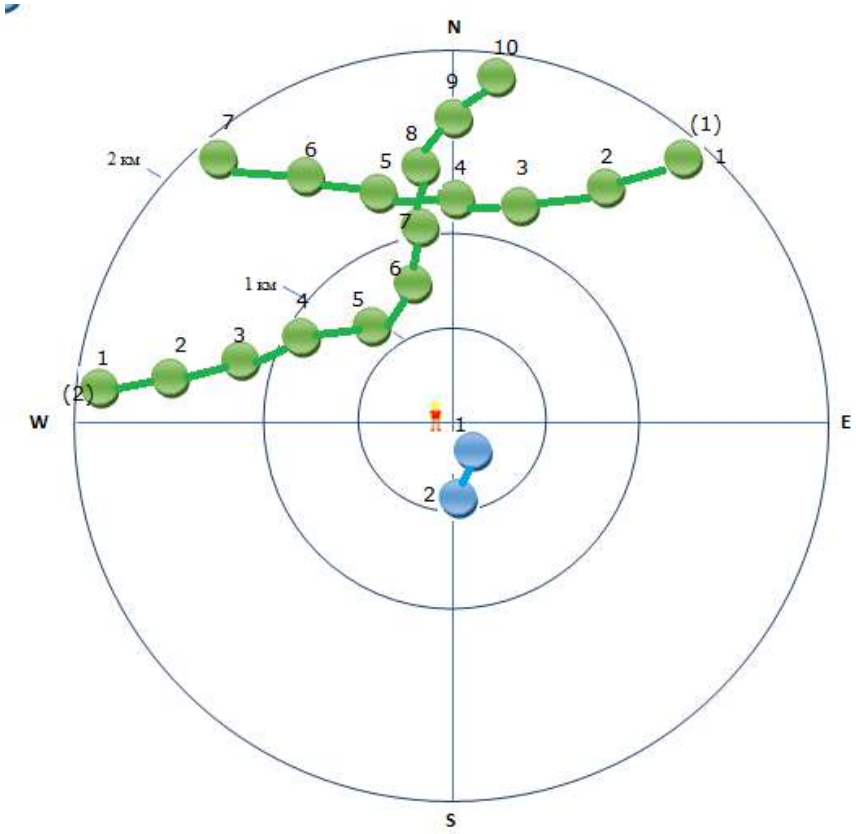


Fig. 28 Flight path (VP 9), 24.09.2020

Table 36 Target species log (VP 9), 24.09.2020

	Gyps fulvus(1)	**9:26**	1 120m	2 125m	3 120m	4 120m	5 125m	6 125m	7 130m	8 130m	9 130m	10 135m
	Gyps fulvus(2)	**9:29**	1 120m	2 125m	3 120m	4 120m	5 125m	6 125m	7 130m			
	Athene noctua	**10:09**	1 0m	2 10m								

VP.11

Date: 24.09.2020. Start and end time: 11:32 – 14:32

Weather:

The air temperature: start 23°C end 24°C Clear

Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.10

Date: 24.09.2020. Start and end time: 15:03– 18:03
Weather:
The air temperature: start 23°C end 21°C clear
Wind speed approx. 4-6 m/s No precipitation

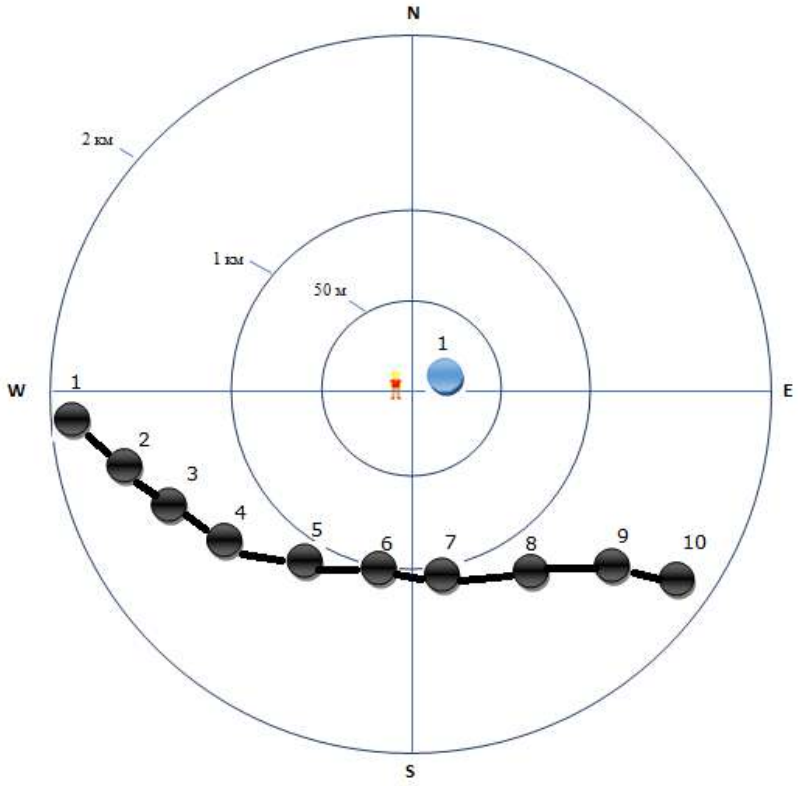


Fig. 29 Flight path (VP 10), 24.09.2020

Table 37 Target species log (VP 10), 24.09.2020

	Aquila nipalensis	**17:12**	1 95m	2 95m	3 90m	4 90m	5 95m	6 95m	7 90m	8 90m	9 90m	10 90m
	Athene noctua	**17:47**	1 0m									

VP. 5

Date: 25.09.2020. Start and end time: 8:15 – 11:15
Weather:
The air temperature: start 20°C end 23 °C is clear
Wind speed approx. (3-5 m/s) No precipitation

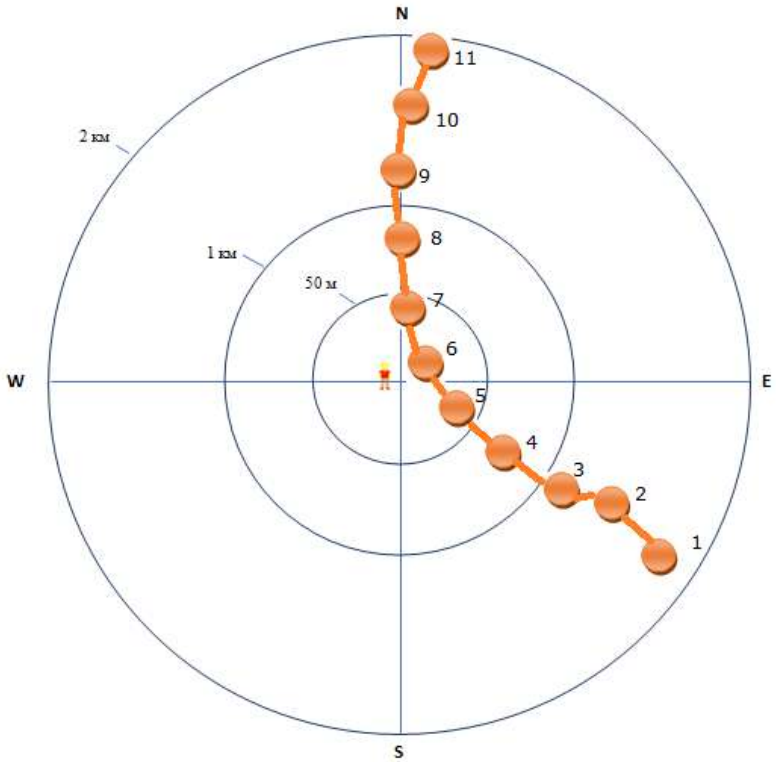


Fig. 30 Flight path (VP 5), 25.09.2020

Table 38 Target species log (VP 5), 25.09.2020

	Neophron percnopterus	**10:21**	1 35m	2 35m	3 50m	4 55m	5 45m	6 30m	7 35m	8 35m	9 30m	10 50m	11 50m

VP. 4

Date: 25.09.2020. Start and end time: 11:47 – 14:50
Weather:
The air temperature: start 21 °C end 23 °C partly cloudy
Wind speed approx. 6-7 m/s) No precipitation

Primary species not found

VP. 2

Date:25.09.2020. Start and end time:15:23 – 18:23
Weather:
The air temperature: start 23 °C end 22 °C partly cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.3

Date: 26.09.2020. Start and end time: 8:21 – 11:21

Weather:

The air temperature: start 24 °C end 21 °C is cloudy

Wind speed approx. (8-10 m/s) No precipitation

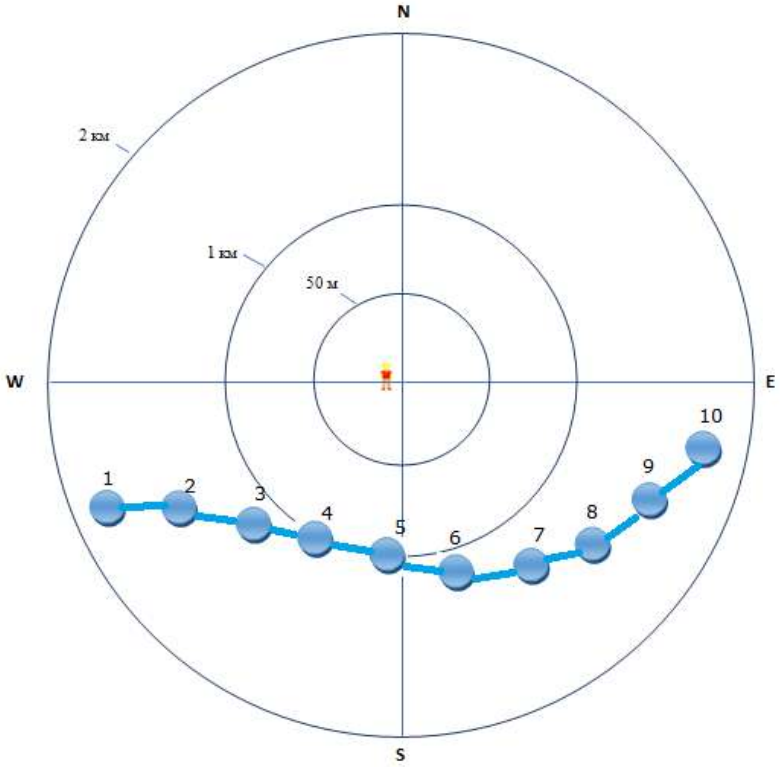


Fig. 31 Flight path (VP 3), 26.09.2020

Table 39 Target species log (VP 3), 26.09.2020

	Aegypius monachus	**9:27**	1 95m	2 90m	3 90m	4 95m	5 95m	6 100m	7 115m	8 115m	9 115m	10 115m

VP.6

Date:26.09.2020. Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 22 °C end 24 °C is clear
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.5

Date:26.09.2020. Start and end time: 15:26 – 18:26
Weather:
The air temperature: start 26 °C end 23°C is clear
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP.4

Date: 27.09.2020. Start and end time: 8:21 – 11:21
Weather:
The air temperature: start 20°C end 23°C is clear
Wind speed approx. (5-7 m/s) No precipitation

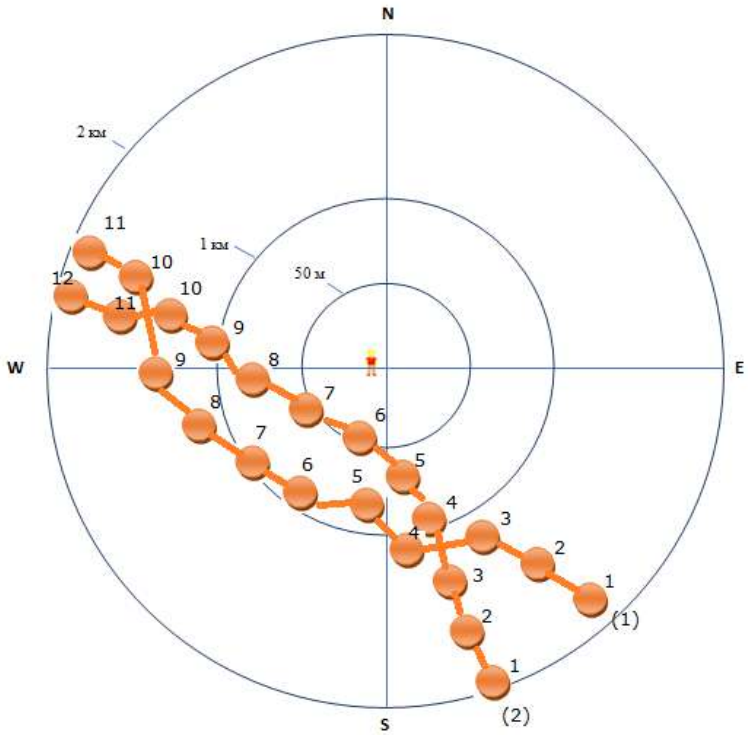


Fig. 32 Flight path (VP 4), 27.09.2020

Table 40 Target species log (VP 4), 27.09.2020

	Neophron percnopterus (1)	**10:36**	1 90m	2 90m	3 90m	4 95m	5 90m	6 90m	7 90m	8 95m	9 90m	10 90m	11 90m	
	Neophron percnopterus (2)	**10:37**	1 90m	2 90m	3 90m	4 95m	5 90m	6 90m	7 90m	8 95m	9 90m	10 90m	11 90m	12 95m

VP.3

Date:27.09.2020. Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 22 °C end 24 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.1

Date:27.09.2020. Start and end time: 15:23 – 18:23
Weather:
The air temperature: start 26 °C end 23°C is clear
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP.3

Date: 28.09.2020. Start and end time: 8:29 – 11:29

Weather:

The air temperature: start 24 °C end 21 °C is sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

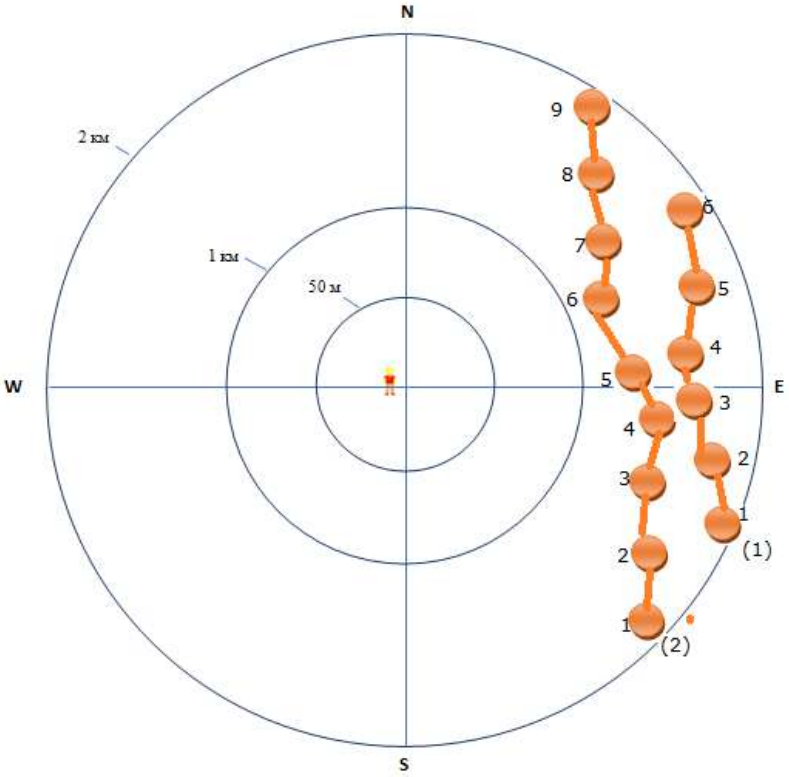


Fig. 33 Flight path (VP 3), 28.09.2020

Table 41 Target species log (VP 3), 28.09.2020

	Neophron percnopterus(1)	**9:27**	1 95m	2 90m	3 90m	4 95m	5 95m	6 100m			
	Neophron percnopterus(2)	**11:15**	1 95m	2 90m	3 90m	4 95m	5 95m	6 100m	7 115m	8 115m	9 115m

VP.6

Date:28.09.2020. Start and end time: 12:06 – 15:06
Weather:
The air temperature: start 22 °C end 24 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.5

Date:28.09.2020. Start and end time: 15:56 – 18:56
Weather:
The air temperature: start 26 °C end 23°C is clear
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP.10

Date: 29.09.2020. Start and end time: 8:21 – 11:21

Weather:

The air temperature: start 21 °C end 24 °C sky half cloudy

Wind speed approx. (5-7 m/s) No precipitation

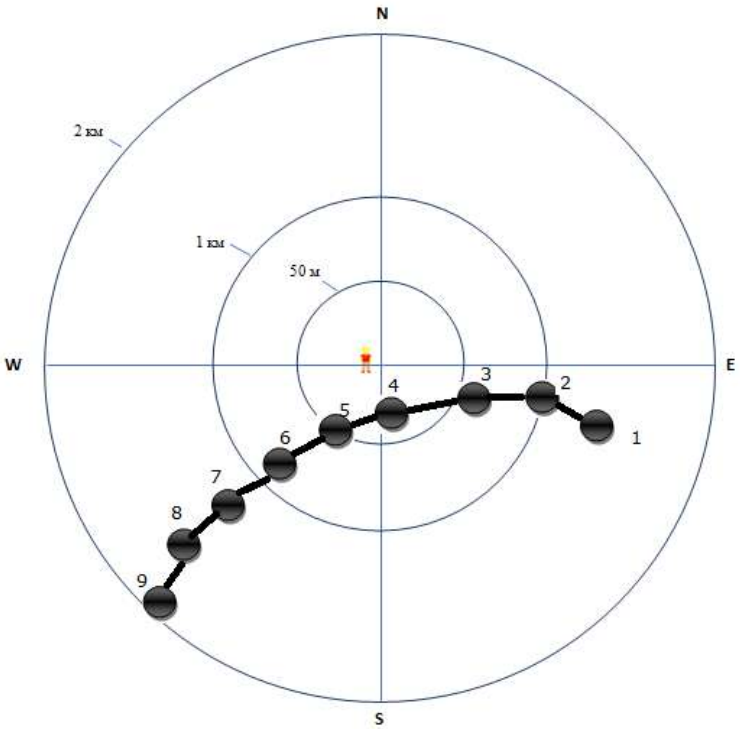


Fig. 34 Flight path (VP 10), 29.09.2020

Table 42 Target species log (VP 10), 29.09.2020

	Aquila nipalensis	**9:28**	1 45m	2 50m	3 60m	4 65m	5 75m	6 90m	7 95m	8 95m	9 95m

VP.6

Date:29.09.2020. Start and end time: 11:56 – 14:56
Weather:
The air temperature: start 22 °C end 24 °C is clear
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.5

Date:29.09.2020. Start and end time: 15:26 – 18:26
Weather:
The air temperature: start 26 °C end 23°C is clear
Wind speed approx. (3-5 m/s) No precipitation

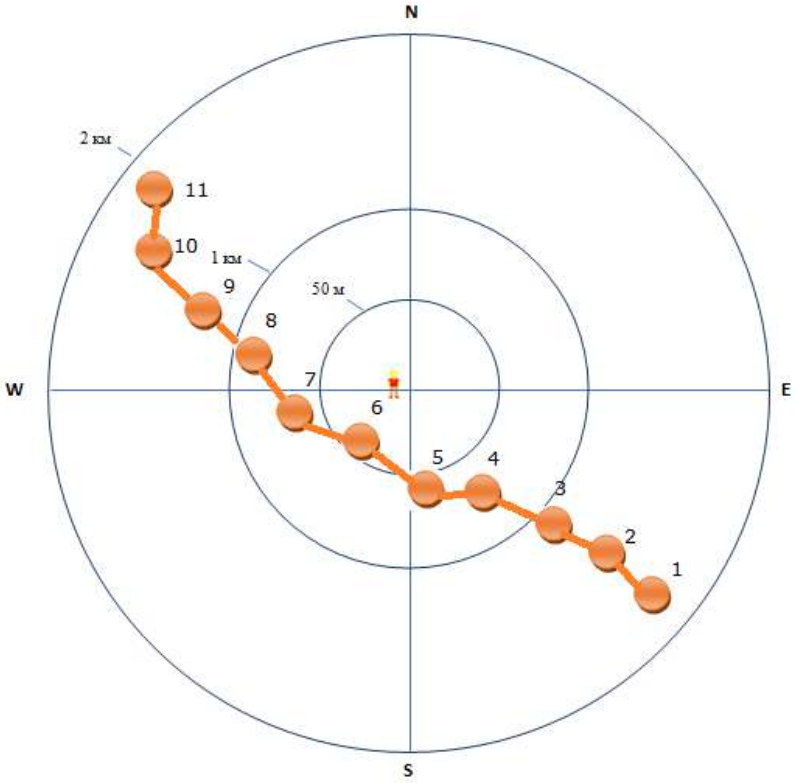


Fig. 35 Flight path (VP 5), 29.09.2020

Table 43 Target species log (VP 5), 29.09.2020

	Neophron percnopterus	**16:05**	1 65m	2 60m	3 50m	4 35m	5 35m	6 20m	7 10m	8 15m	9 30m	10 35m	11 40m

VP. 1

Date: 30.09.2020. Start and end time: 7:47 – 10:50
Weather:
The air temperature: start 19 °C end 23 °C partly cloudy
Wind speed approx. (6-7 m/s) No precipitation

Primary species not found

VP. 2

Date: 30.09.2020. Start and end time:11:23 – 14:23
Weather:
The air temperature: start 23 °C end 24 °C partly cloudy
Wind speed approx. (6-8 m/s) No precipitation

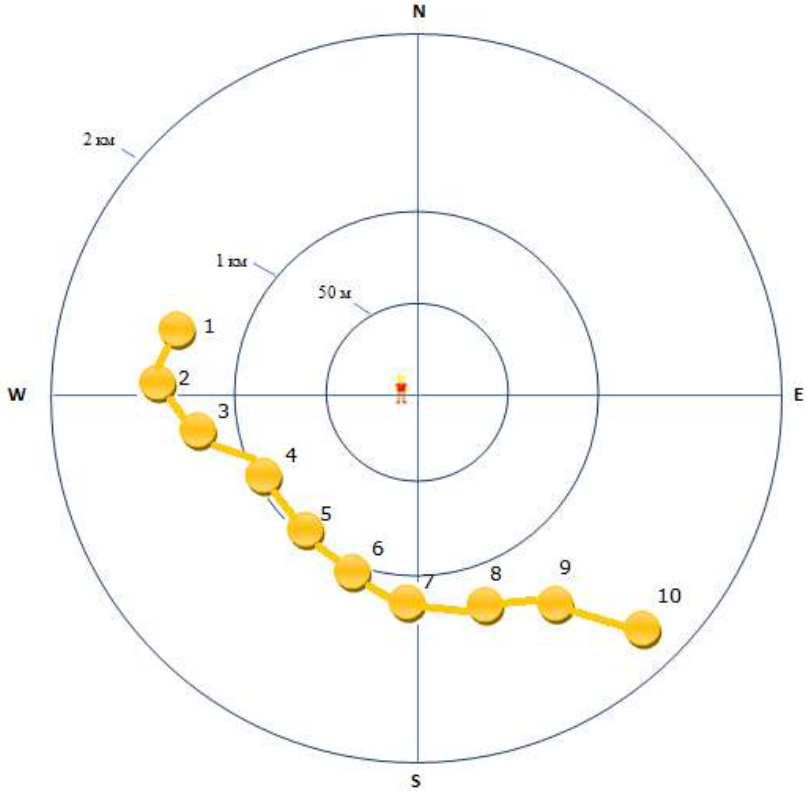


Fig. 36 Flight path (VP 2), 30.09.2020

Table 44 Target species log (VP 2), 30.09.2020

	Circus cyaneus	**11:52**	1 0m	2 15m	3 26m	4 25m	5 25m	6 20m	7 25m	8 25m	9 15m	10 15m

VP.3

Date: 30.09.2020. Start and end time: 15:21 – 18:21
Weather:
The air temperature: start 24 °C end 21 °C sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation

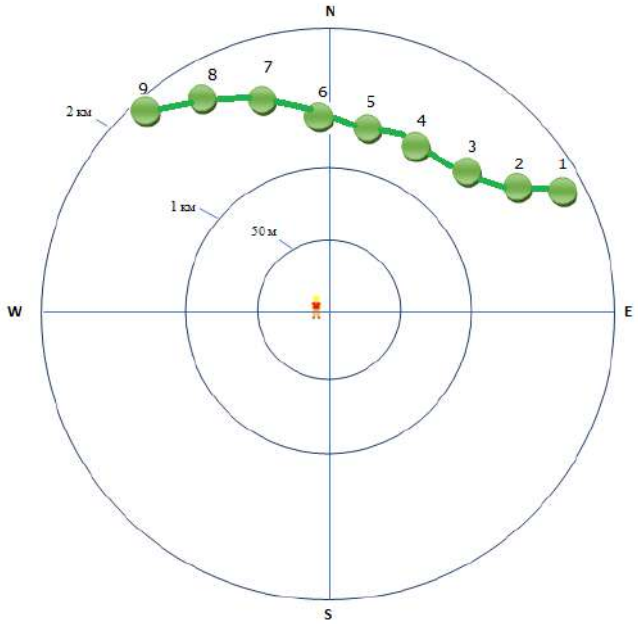


Fig. 37 Flight path (VP 3), 30.09.2020

Table 45 Target species log (VP 3), 30.09.2020

	Gyps fulvus	**15:32**	1 145m	2 150m	3 160m	4 165m	5 175m	6 190m	7 195m	8 195m	9 195m

VP survey results in October

VP.7

Date: 03.10.2020. Start and end time: 7:59 – 10:59
Weather:
The air temperature: start 18°C end 23°C is clear
Wind speed approx. (3-5 m/s)
No precipitation
Primary species not found

VP. 8

Date: 03.10.2020. Start and end time: 11:36 – 14:36

Weather:

The air temperature: start 23°C end 28°C is clear,

Wind speed approx. (3-5 m/s)

No precipitation

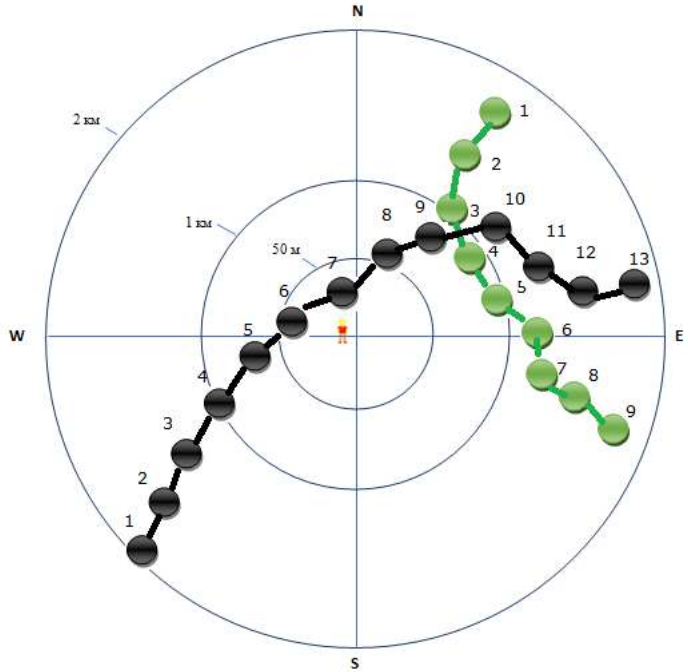


Fig. 38 Flight path (VP 8), 03.10.2020

Table 46 Target species log (VP 8), 03.10.2020

	Aquila nipalensis	**11:45**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90 m	8 95 m	9 95m	10 90 m	11 90 m	12 90m	13 90m
	Falco naumanni	**13:54**	1 20m	2 20m	3 30m	4 40m	5 45m	6 50m	7 50 m	8 45 m	9 45m				

VP. 9

Date: 03.10.2020. Start and end time: 15:13 – 18:13

Weather

The air temperature: start 23°C end 21°C is clear

Wind speed approx. (6-7 m/s)

No precipitation

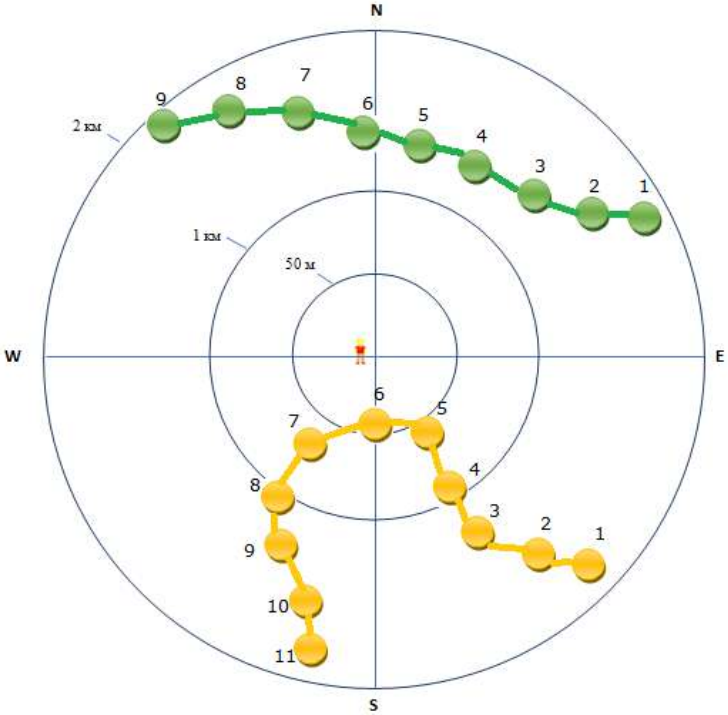


Fig. 39 Flight path (VP 9), 03.10.2020

Table 47 Target species log (VP 9), 03.10.2020

	Gyps fulvus	**15:41**	1 125m	2 125m	3 100m	4 120m	5 95m	6 85m	7 90m	8 90m	9 90m		
	Buteo rufinus	**17:06**	1 95m	2 95m	3 90m	4 80m	5 75m	6 75m	7 60m	8 70m	9 90m	10 95m	11 95m

VP.13

Date: 04.10.2020. Start and end time: 8:32 – 11:32

Weather:

The air temperature: start 18°C end 22°C sky completely cloudy

Wind speed approx. (5-6 m/s) precipitation

Primary species not found

VP. 12

Date: 04.10.2020. Start and end time: 12:07 – 15:07

Weather

The air temperature: start 23°C end 25°C sky half cloudy

Wind speed approx. (8-9 m/s) No precipitation

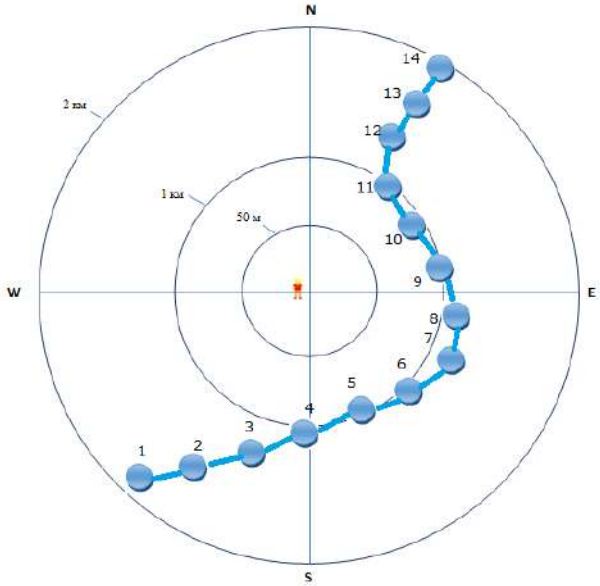


Fig. 40 Flight path (VP 12), 04.10.2020

Table 48 Target species log (VP 12), 04.10.2020

	Aegypius monachus	**13:12**	1 170m	2 175m	3 170m	4 170m	5 165m	6 155m	7 150m	8 150m	9 145m	10 150m	11 150m	12 155m	13 155m	14 150m

VP.14

Date: 04.10.2020. Start and end time: 15:38– 18:38

Weather:

The air temperature: start 24°C end 21°C sky half cloudy.

Wind speed approx. (5-6 m/s) No precipitation

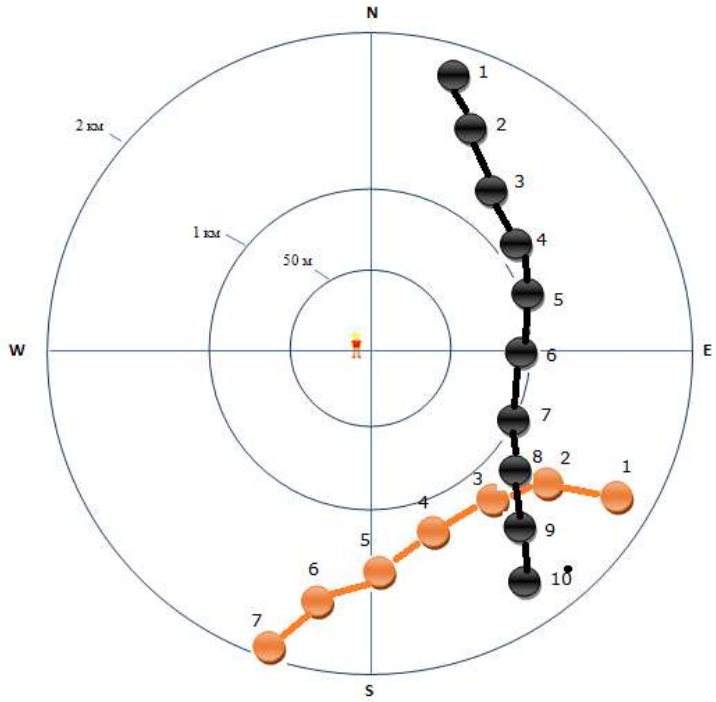


Fig. 41 Flight path (VP 14), 04.10.2020

Table 49 Target species log (VP 14), 04.10.2020

	Gypaetus barbatus	**16:23**	1 125m	2 125m	3 120m	4 120m	5 125m	6 125m	7 120m			
	Aquila nipalensis	**17:52**	1 110m	2 110m	3 110m	4 110m	5 110 m	6 110m	7 110m	8 110m	9 110m	10 110m

VP. 10

Date: 05.10.2020. Start and end time: 7:34 – 10:34
Weather:
The air temperature: start 19°C end 23°C cloudy.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 11

Date: 05.10.2020. Start and end time: 11:12 – 14:12
Weather:
The air temperature: start 23°C end 25°C cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.8

Date: 05.10.2020. Start and end time: 14:43 – 17:43

Weather:

The air temperature: start 19°C end 22°C cloudy.

Wind speed approx. (6-8 m/s) No precipitation

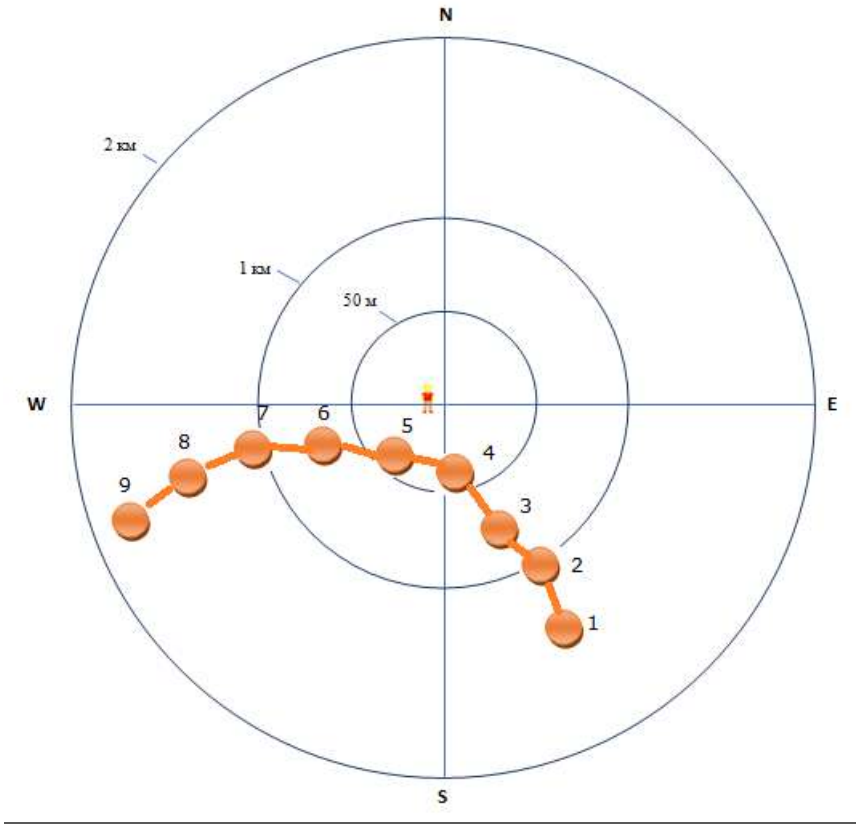


Fig. 42 Flight path (VP 8), 05.10.2020

Table 50 Target species log (VP 8), 05.10.2020

	Falco tinnunculus	**16:29**	1 40m	2 40m	3 45m	4 45m	5 45m	6 50m	7 50m	8 50m	9 45m

VP. 7

Date: 06.10.2020. Start and end time: 7:59 – 10:59

Weather:

The air temperature: start 19°C end 22°C sky half cloudy

Wind speed approx. (7-9 m/s) No precipitation

Primary species not found

VP. 6

Date: 06.10.2020. Start and end time: 11:29 – 14:29

Weather:

The air temperature: start 22°C end 21°C sky half cloudy

Wind speed approx. (5-7 m/s) No precipitation

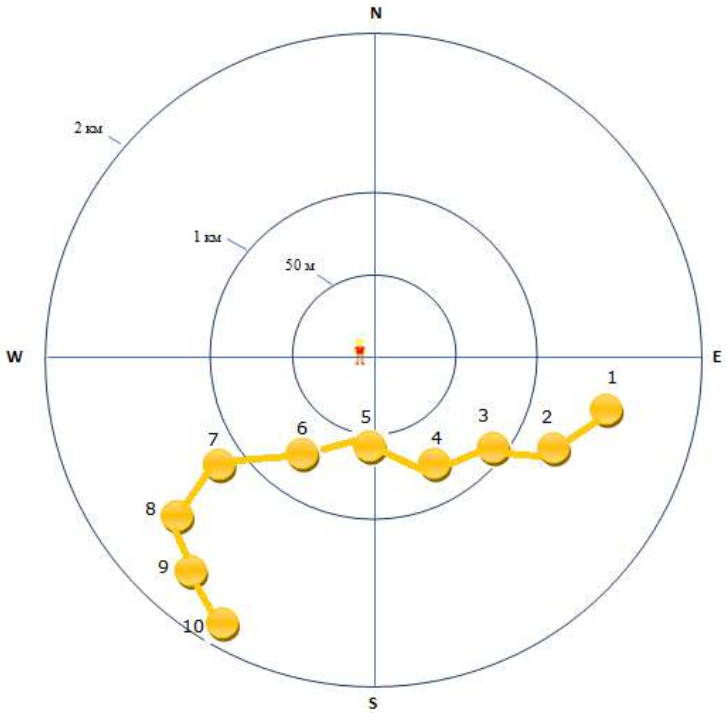


Fig. 43 Flight path (VP 6), 06.10.2020

Table 51 Target species log (VP 6),06.10.2020

	Circus cyaneus	**12:31**	1 30m	2 30m	3 40m	4 45m	5 45m	6 50m	7 45m	8 45m	9 40m	10 40m

VP.9

Date:06.10..2020. Start and end time: 15:06 – 18:06
Weather:
The air temperature: start 22°C end 21°C is sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 13

Date:07.10.2020. Start and end time: 8:26 – 11:26
Weather:
The air temperature: start 19°C end 24°C is clear
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP.12

Date:07.10.2020. Start and end time: 11:58 – 14:58

Weather:

The air temperature: start 24°C end 23°C is clear

Wind speed approx. (5-6 m/s) No precipitation

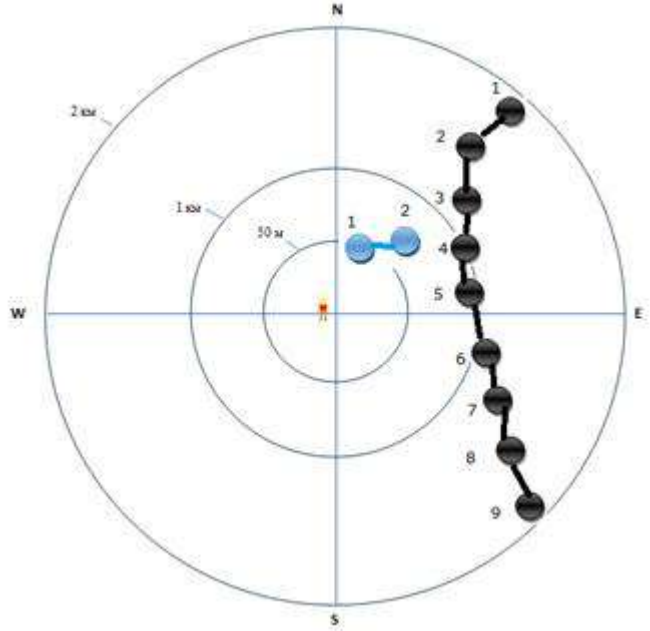


Fig. 44 Flight path (VP 12), 07.10.2020

Table 52 Target species log (VP 12), 07.10.2020

	Athene noctua	**12:28**	1 2m	2 0m							
	Aquila nipalensis	**13:36**	1 75m	2 65m	3 60m	4 55m	5 55m	6 60m	7 75m	8 95m	9 90m

VP 14

Date: 07.10.2020. Start and end time: 15:26 – 18:26
Weather:
The air temperature: start 27°C end 23°C is clear
Wind speed approx. (6-8 m/s) No precipitation

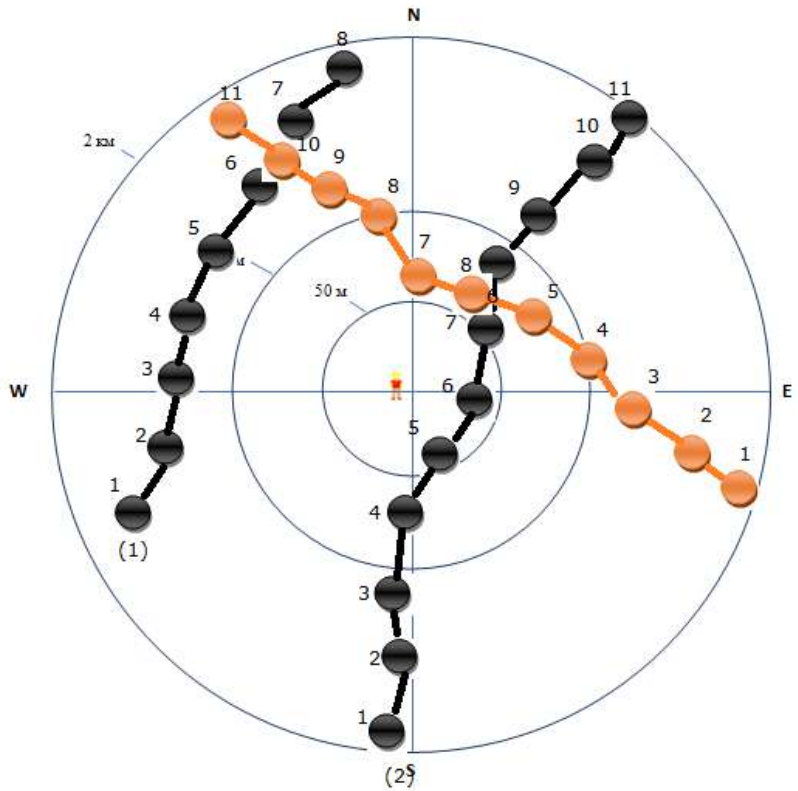


Fig. 45 Flight path (VP 14), 07.10.2020

Table 53 Target species log (VP 14), 07.10.2020

	Aquila nipalensis (1)	**15:38**	1 90m	2 95m	3 100m	4 105m	5 105m	6 100m	7 115m	8 115m	9 120m	10 120m	11 120m
	Aquila nipalensis (2)	**16:32**	1 95m	2 95m	3 90m	4 95m	5 95m	6 90m	7 95m	8 95m			
	Neophron percnopterus	**17:56**	1 120m	2 125m	3 120m	4 125m	5 125m	6 120m	7 125m	8 115m	9 120m	10 120m	11 120m

VP.5

Date: 08.10.2020. Start and end time: 7:42 – 10:42
Weather:
The air temperature: start 18°C end 22°C is sky half cloudy
Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 4

Date: 08.10.2020. Start and end time: 11:13 – 14:11
Weather:
The air temperature: start 22°C end 26°C is clear
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP. 6

Date: 08.10.2020. Start and end time: 14:47 – 17:47
Weather:
The air temperature: start 26°C end 24 °C is clear
Wind speed approx. (3-5 m/s) No precipitation

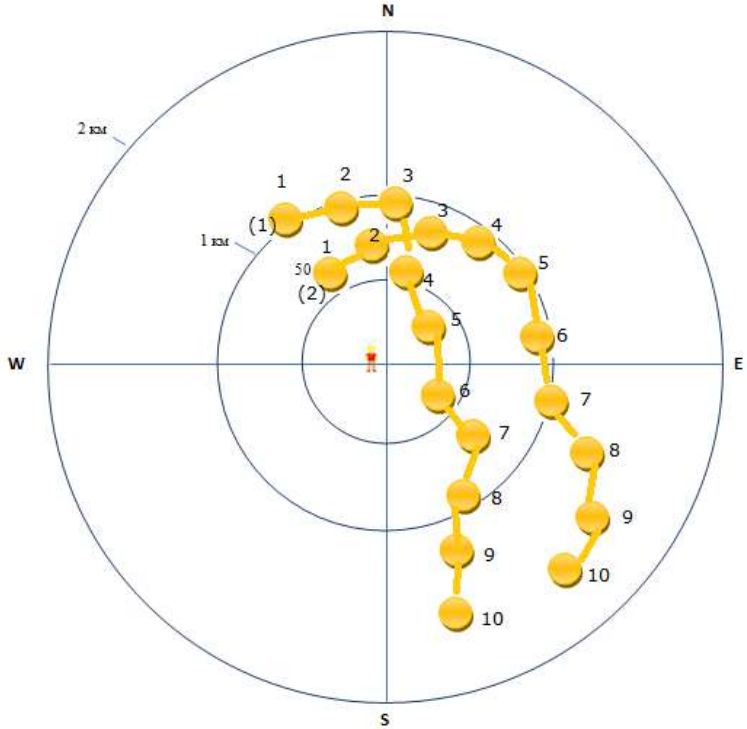


Fig. 46 Flight path(VP 6), 08.10.2020

Table 54 Target species log (VP 6), 08.10.2020

	Falco tinnunculus (1)	**15:21**	1 35m	2 35m	3 30m	4 25m	5 25m	6 30m	7 35m	8 35m	9 30m	10 30m
	Falco tinnunculus (2)	**15:22**	1 35m	2 35m	3 35m	4 35m	5 25m	6 30m	7 35m	8 35m	9 30m	10 35m

VP. 9

Date: 09.10.2020. Start and end time: 7:47 – 10:50

Weather:

The air temperature: start 19 °C end 23 °C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

Primary species not found

VP. 10

Date: 09.10.2020. Start and end time:11:23 – 14:23
Weather:
The air temperature: start 23 °C end 24 °C sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.11

Date: 09.10.2020. Start and end time: 15:21 – 18:21
Weather:
The air temperature: start 24 °C end 21 °C sky half cloudy
Wind speed approx. (8-10 m/s) No precipitation

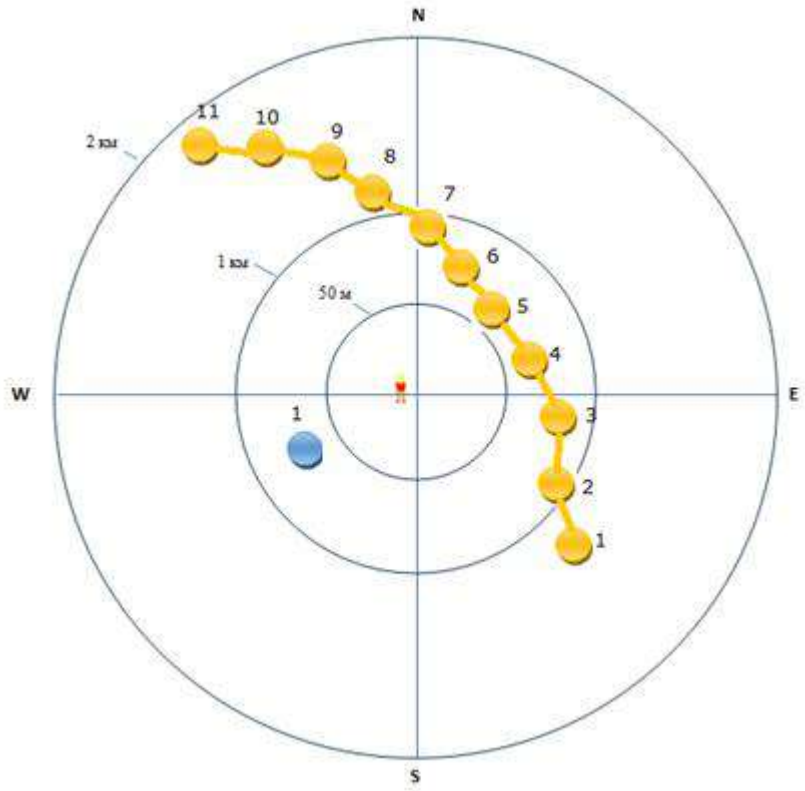


Fig. 47 Flight path (VP 11), 09.10.2020

Table 55 Target species log (VP 11), 09.10.2020

	Buteo rufinus	**15:42**	1 45m	2 50m	3 60m	4 65m	5 75m	6 90m	7 95m	8 95m	9 95m	10 95m	11 95m
	Athene noctua	**16:35**	1 0m										

VP.1

Date:13.10.2020. Start and end time: 8:23 – 11:23

Weather:

The air temperature: start 22 °C end 24 °C is clear

Wind speed approx. (3-5 m/s) No precipitation

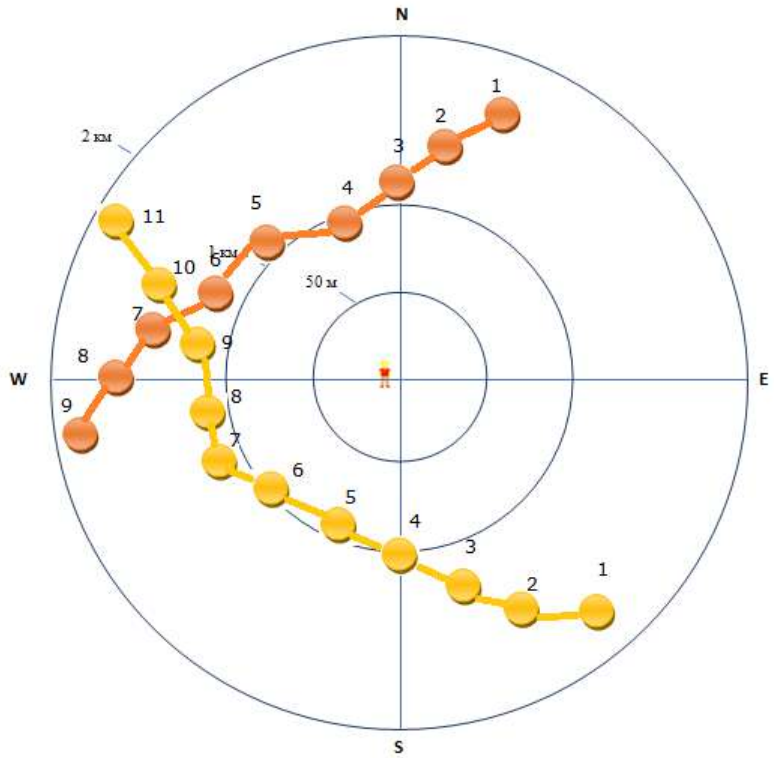


Fig. 48 Flight path (VP 1), 13.10.2020

Table 56 Target species log (VP 1), 13.10.2020

	Buteo rufinus	**10:21**	1 25m	2 30m	3 35m	4 45m	5 55m	6 60m	7 65m	8 65m	9 65m	10 65m	11 65m
	Circus cyaneus	**11:13**	1 35m	2 30m	3 30m	4 25m	5 25m	6 20m	7 15m	8 15m	9 15m		

VP.2

Date:13.10.2020. Start and end time: 11:57 – 15:00

Weather:

The air temperature: start 24 °C end 27°C is clear

Wind speed approx. (3-5 m/s) No precipitation

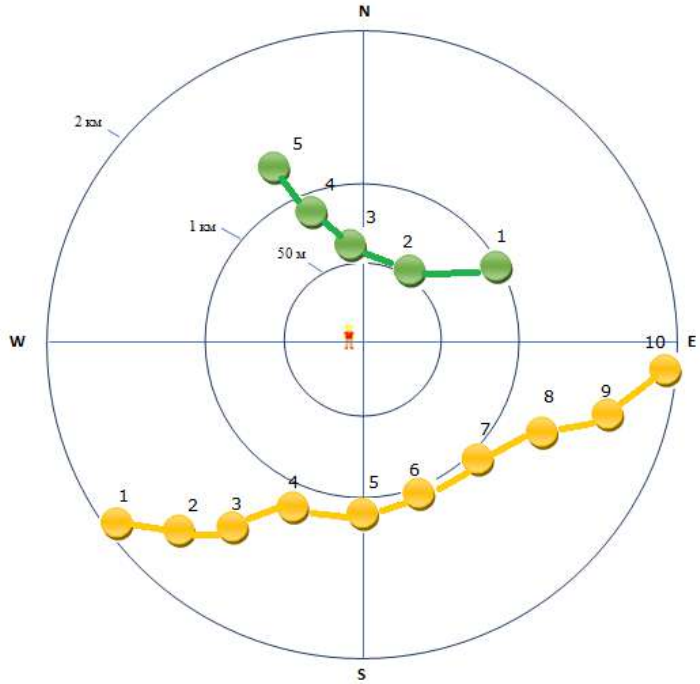


Fig. 49 Flight path (VP 2), 13.10.2020

Table 57 Target species log (VP 2), 13.10.2020

	Circus cyaneus	**12:25**	1 55m	2 60m	3 50m	4 35m	5 35m	6 20m	7 10m	8 15m	9 30m	10 35m
	Falco tinnunculus	**14:36**	1 15m	2 20m	3 20m	4 25m	5 20m					

VP.3

Date: 13.10.2020. Start and end time: 15:28 – 18:28

Weather:

The air temperature: start 27°C end 23°C is clear

Wind speed approx. (5-7 m/s) No precipitation

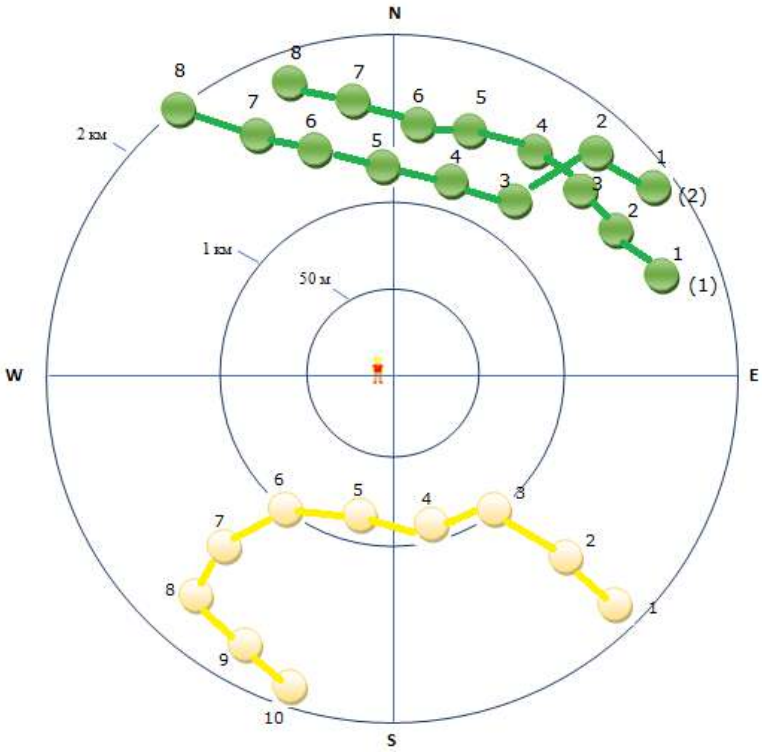


Fig. 50 Flight path (VP 3), 13.10.2020.

Table 58 Target species log (VP 3), 13.10.2020

	Falco tinnunculus	**15:47**	1 10m	2 20m	3 30 m	4 35m	5 30m	6 30m	7 30m	8 35m	9 30m	10 20m
	Gyps fulvus (1)	**17:09**	1 190m	2 190m	3 190m	4 195m	5 190m	6 190m	7 190m	8 195m		
	Gyps fulvus (2)	**17:10**	1 190m	2 190m	3 190m	4 195m	5 190m	6 190m	7 190m	8 195m		

VP. 7

Date: 14.10.2020. Start and end time: 8:17 – 11:17
Weather:
The air temperature: start 19 °C end 21 °C is sky half cloudy
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP. 6

Date: 14.10.2020. Start and end time: 11:53 – 14:53

Weather:

The air temperature: start 22°C end 25°C is clear

Wind speed approx. (6-8 m/s) No precipitation

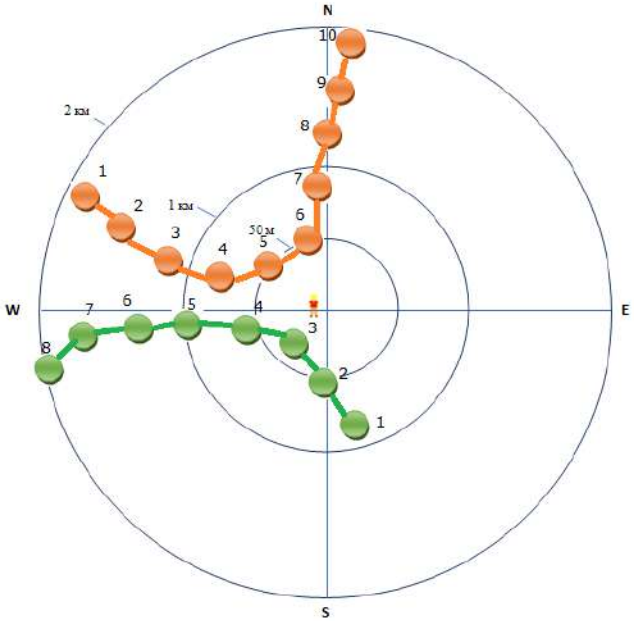


Fig. 51 Flight path (VP 6), 14.10.2020

Table 59 Target species log (VP 6), 14.10.2020

	Neophron percnopterus	**12:45**	1 100m	2 100m	3 100m	4 105m	5 100m	6 100m	7 100m	8 105m	9 100m	10 100m
	Falco tinnunculus	**14:17**	1 30m	2 30m	3 30m	4 35m	5 30m	6 30m	7 30m	8 25m		

VP 8

Date: 14.10.2020. Start and end time: 15:19 – 18:19

Weather:

The air temperature: start 26 °C end 23 °C is clear

Wind speed approx. (6-7 m/s) No precipitation

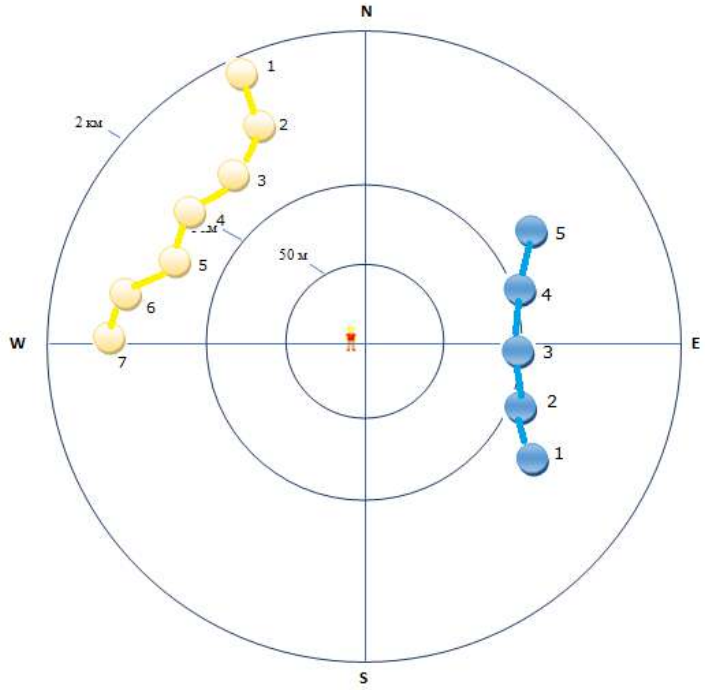


Fig. 52 Flight path (VP 8), 14.10.2020

Table 60 Target species log (VP 8), 14.10.2020

	Falco tinnunculus	**15:42**	1 30m	2 40m	3 50m	4 55m	5 60m	6 60m	7 60m
	Athene noctua	**17:51**	1 0m	2 10m	3 10m	4 15m	5 0m		

VP. 9

Date: 15.10.2020. Start and end time: 8:23 – 11:23
Weather:
The air temperature: start 18 °C end 22 °C is sky half cloudy
Wind speed approx. (7-8 m/s) No precipitation
Primary species not found

VP. 10

Date: 15.10.2020. Start and end time: 11:56 – 14:56

Weather:

The air temperature: start 22 °C end 25 °C is clear

Wind speed approx. (5-6 m/s) No precipitation

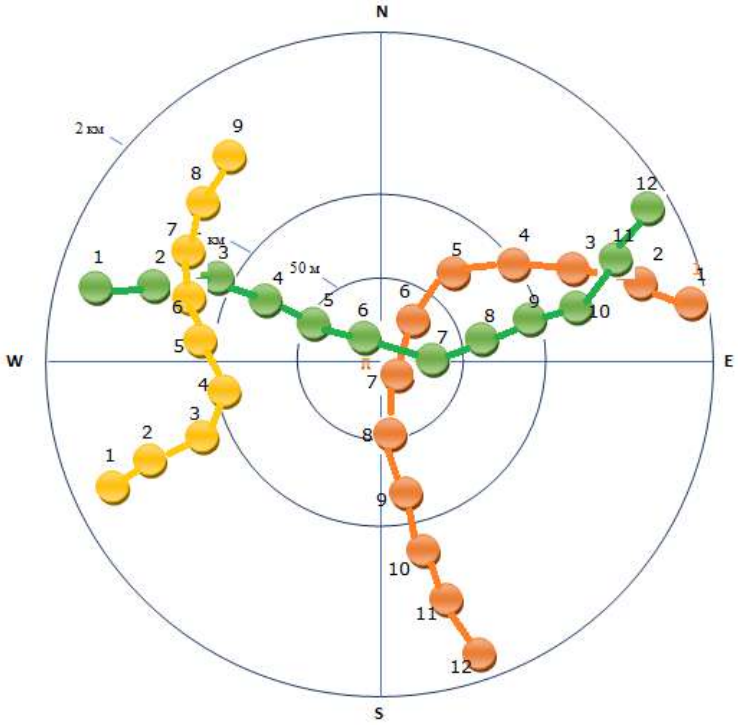


Fig. 53 Flight path (VP 10), 15.10.2020

Table 61 Target species log (VP 10), 15.10.2020

	Neophron Percnopterus	**11:58**	1 90m	2 90m	3 80m	4 70m	5 70m	6 60m	7 55m	8 55m	9 60m	10 60m	11 60m	12 60m
	Aegypius monachus	**13:44**	1 170m	2 190m	3 180m	4 170m	5 170m	6 160m	7 155m	8 155m	9 160m	10 160m	11 160m	12 160m
	Falco tinnunculus	**14:16**	1 10m	2 20m	3 20m	4 30m	5 30m	6 30m	7 35m	8 35m	9 30m			

VP.11

Date: 15.20.2020. Start and end time: 15:32 – 18:32
Weather:
The air temperature: start 24 °C end 22 °C is cloudy
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 4

Date: 16.10.2020. Start and end time: 8:26 – 11:26

Weather:

The air temperature: start 19 °C end 22 °C is sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

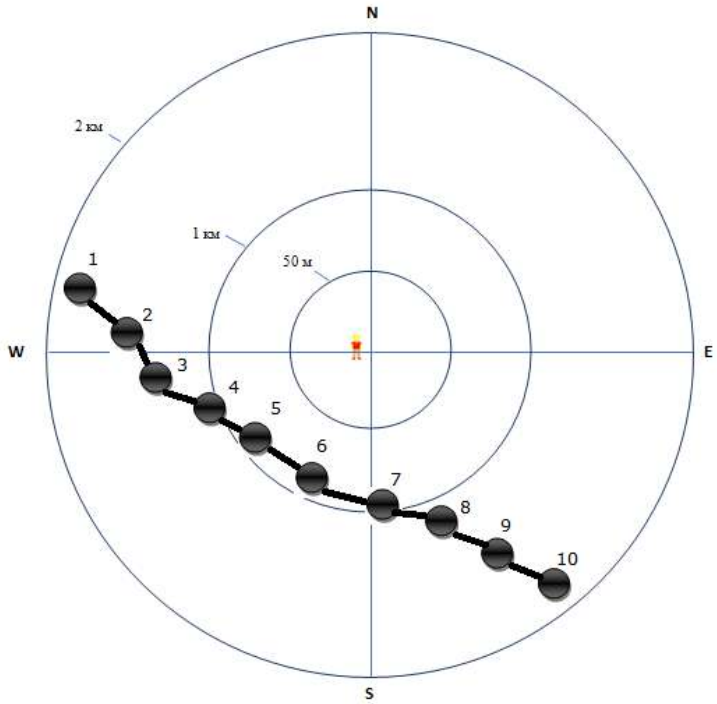


Fig. 54 Flight path (VP 4), 16.10.2020

Table 62 Target species log (VP 4), 16.10.2020

	Aquila nipalensis	**10:51**	1 90m	2 90m	3 120m	4 125m	5 130m	6 130m	7 135m	8 135m	9 130m	10 130m

VP 5

Date: 16.10.2020. Start and end time: 11:57 – 14:57
Weather:
The air temperature: start 23 °C end 25 °C is sky half cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP. 7

Date: 16.10.2020. Start and end time: 15:29 – 18:29
Weather:
The air temperature: start 25 °C end 22 °C is sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 7

Date:17.10.2020. Start and end time: 7:53 – 10:53

Weather:

The air temperature: start 18 °C end 19 °C is sky completely cloudy

Wind speed approx. (6-8 m/s) precipitation

Primary species not found

VP. 8

Date: 17.10.2020. Start and end time: 11:25 – 14:25
Weather:
The air temperature: start 20 °C end 22 °C is sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 9

Date: 17.10.2020. Start and end time: 14:58 – 17:58

Weather:

The air temperature: start 24 °C end 21 °C is cloudy.

Wind speed approx. (8-10 m/s) No precipitation

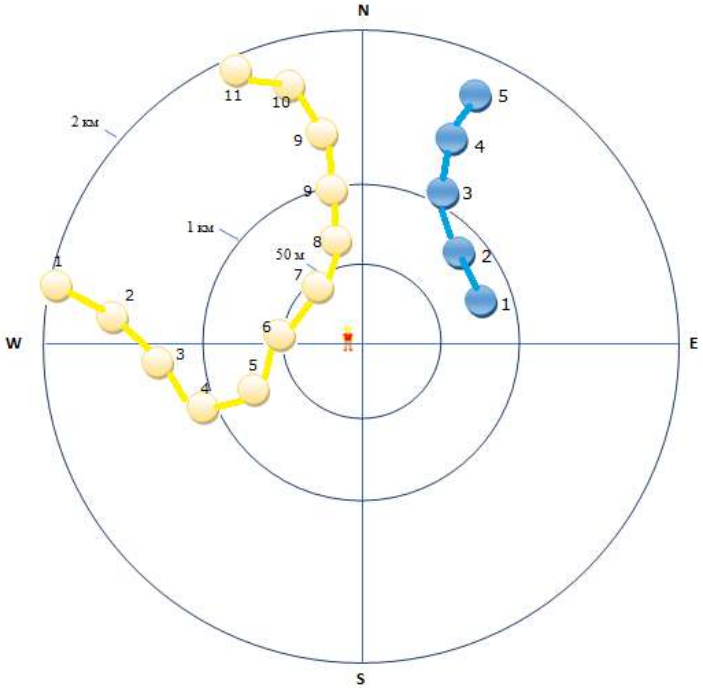


Fig. 55 Flight path (VP 9), 17.10.2020

Table 63 Target species log (VP 9), 17.10.2020

	Buteo rufinus	**16:42**	1 80m	2 80m	3 80m	4 85m	5 80m	6 80m	7 80m	8 80m	9 80m	10 85m	11 80m
	Athene noctua	**17:52**	1 0m	2 10m	3 10m	4 15m	5 0m						

VP. 1

Date:18.10.2020. Start and end time: 7:46 – 10:46

Weather

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (2-4 m/s) No precipitation

Primary species not found

VP. 2

Date: 18.10.2020. Start and end time: 11:19 – 14:19

Weather:

The air temperature: start 23 °C end 26 °C is clear

Wind speed approx. (6-8 m/s) No precipitation

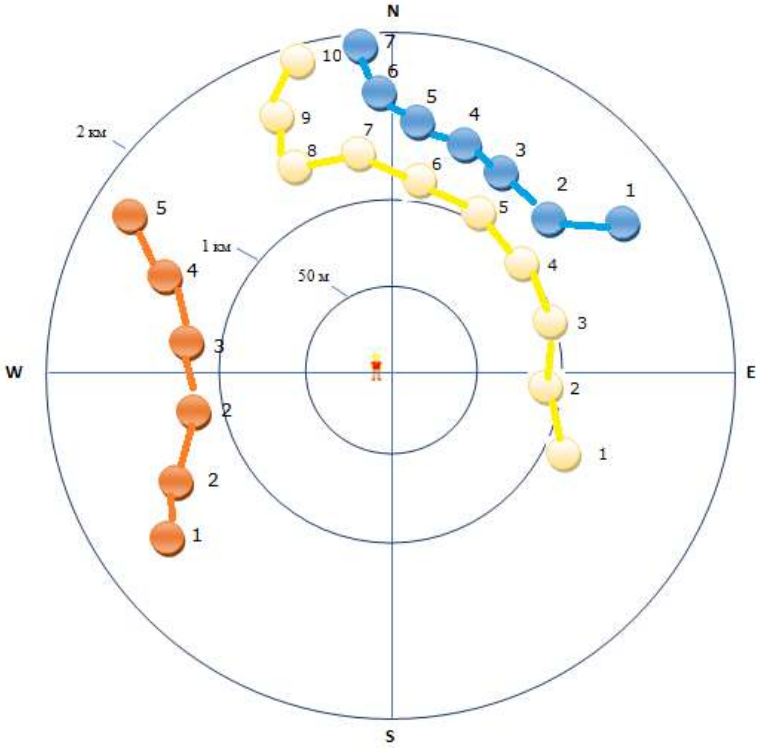


Fig. 56 Flight path (VP 2), 18.10.2020

Table 64 Target species log(VP 2), 18.10.2020

	Circus cyaneus	**11:43**	1 20m	2 25m	3 40m	4 25m	5 30m					
	Aegypius monachus	**13:02**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m			
	Falco tinnunculus	**13:57**	1 20m	2 25m	3 20m	4 25m	5 30m	6 30m	7 10m	8 10m	9 10m	10 15m

VP. 3

Date: 18.10.2020. Start and end time: 14:58 – 17:58

Weather:

The air temperature: start 24 °C end 21 °C is cloudy.

Wind speed approx. (6-8 m/s) No precipitation

Primary species not found

VP. 12

Date: 19.10.2020. Start and end time: 8:28 – 11:28
Weather:
The air temperature: start 18 °C end 22 °C is sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 13

Date: 19.10.2020. Start and end time: 12:38 – 15:38

Weather:

The air temperature: start 24 °C end 27 °C is cloudy.

Wind speed approx. (8-10 m/s) No precipitation

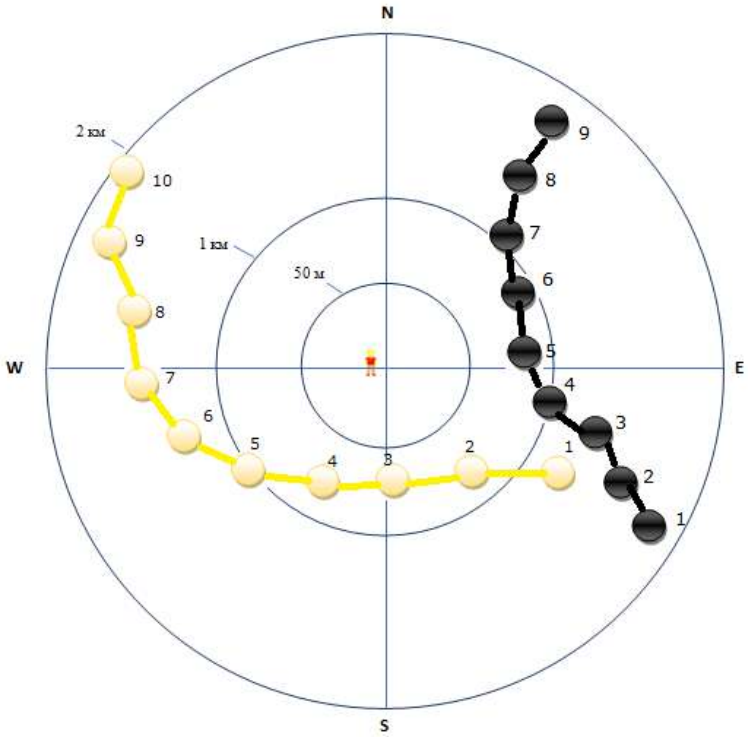


Fig. 57 Flight path (VP 13), 19.10.2020

Table 65 Target species log (VP 13), 19.10.2020

	Buteo rufinus	**13:18**	1 80m	2 80m	3 60m	4 65m	5 60m	6 60m	7 60m	8 60m	9 60m	10 65m
	Aquila nipalensis	**14:54**	1 180m	2 180m	3 180m	4 185m	5 180m	6 180m	7 180m	8 180m	9 180m	

VP. 14

Date:19.10.2020. Start and end time: 15:59 – 18:59

Weather

The air temperature: start 26 °C end 22 °C is cloudy.

Wind speed approx. (4-6 m/s) No precipitation

Primary species not found

VP. 8

Date: 24.10.2020. Start and end time: 8:13 – 11:13
Weather:
The air temperature: start 19 °C end 22 °C is sky half cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.11

Date: 24.10.2020. Start and end time: 11:48 – 14:58
Weather:
The air temperature: start 23 °C end 24 °C is sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 10

Date: 24.10.2020. Start and end time: 15:29 – 18:29

Weather:

The air temperature: start 24 °C end 21 °C is sky half cloudy

Wind speed approx. (5-7 m/s) No precipitation

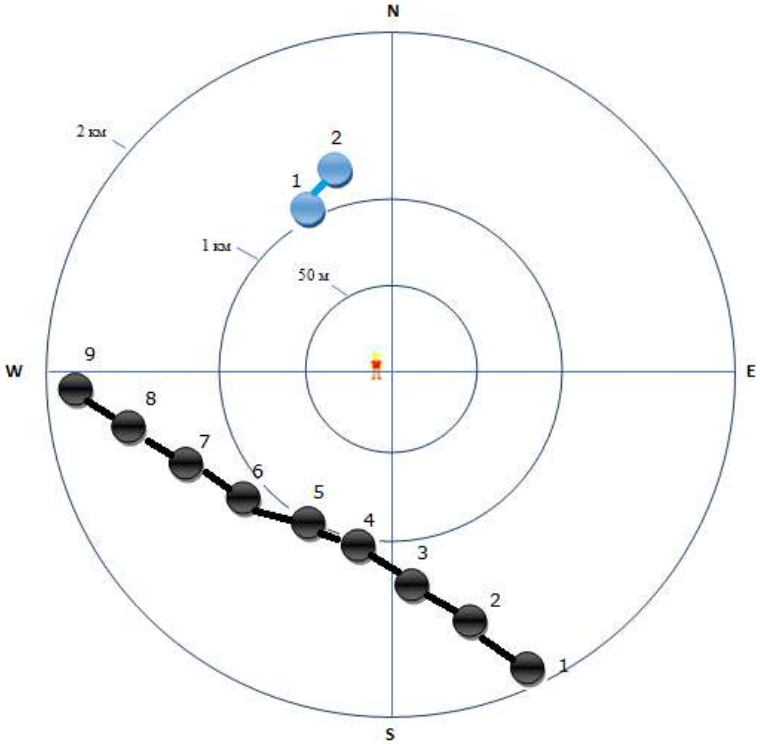


Fig. 58 Flight path (VP 10), 24.10.2020

Table 66 Target species log (VP 10), 24.10.2020

	Aquila nipalensis	**16:13**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 120m
	Athene noctua	**17:13**	1 8 m	2 0 m							

VP. 7

Date: 25.10.2020. Start and end time: 8:22 – 11:22
Weather:
The air temperature: start 18 °C end 22 °C is cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 6

Date: 25.10.2020. Start and end time: 11:57 – 14:57

Weather:

The air temperature: start 24 °C end 27 °C is cloudy.

Wind speed approx. (4-5 m/s) No precipitation

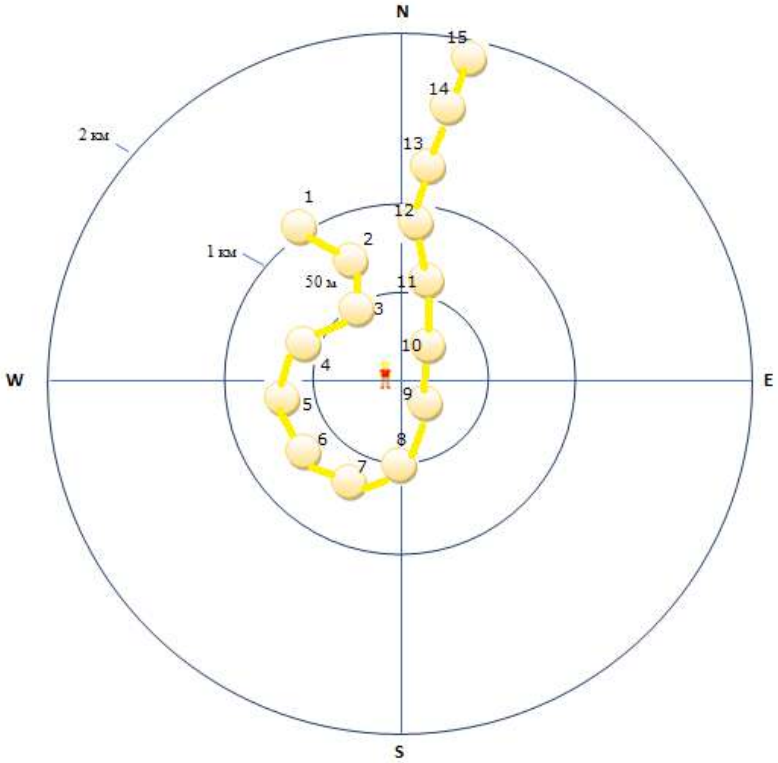


Fig. 59 Flight path (VP 6), 25.10.2020

Table 67 Target species log (VP 6), 25.10.2020

	Falco tinnunculus	**12:18**	1 20m	2 20m	3 30m	4 35m	5 10m	6 20m	7 20m	8 30m	9 30m	10 35m	11 40m	12 40m	13 40m	14 45m	15 40m

VP. 5

Date: 25.10.2020. Start and end time: 15:23 – 18:23

Weather:

The air temperature: start 26 °C end 22 °C is clear

Wind speed approx. (5-7 m/s) No precipitation

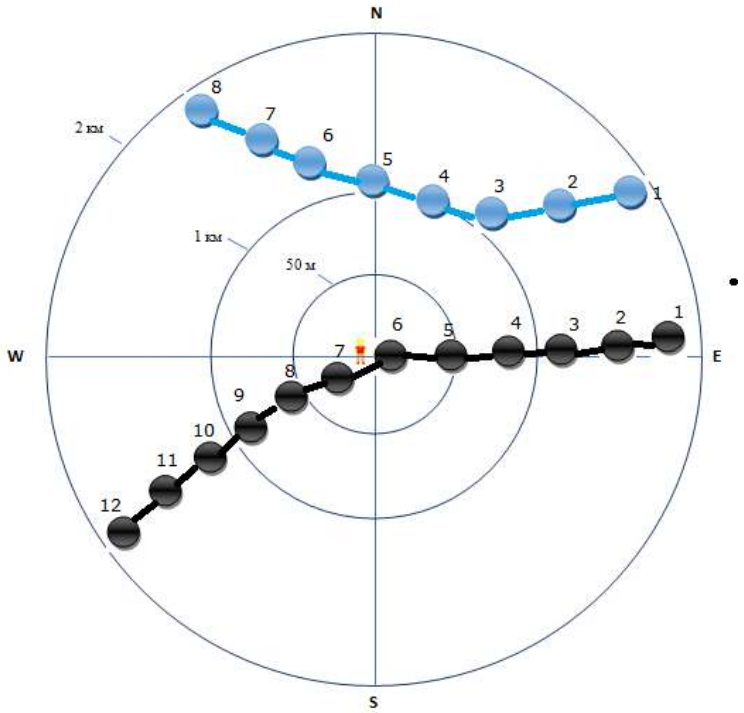


Fig. 60 Flight path (VP 5), 25.10.2020

Table 68 Target species log (VP 5), 25.10.2020

	Falco tinnunculus	**15:36**	1 20m	2 25m	3 30m	4 35m	5 40m	6 40m	7 40m	8 40m				
	Aquila nipalensis	**16:12**	1 100m	2 115m	3 120m	4 125m	5 120m	6 120m	7 120m	8 120m	9 100m	10 115m	11 120m	12 125m

VP. 1

Date: 26.10.2020. Start and end time: 8:28 – 11:28

Weather:

The air temperature: start 19 °C end 22 °C is cloudy.

Wind speed approx. (3-4 m/s) No precipitation

Primary species not found

VP. 2

Date: 26.10.2020. Start and end time: 11:56 – 14:56

Weather:

The air temperature: start 22°C end 24°C is clear,

Wind speed approx. (3-5 m/s)

No precipitation

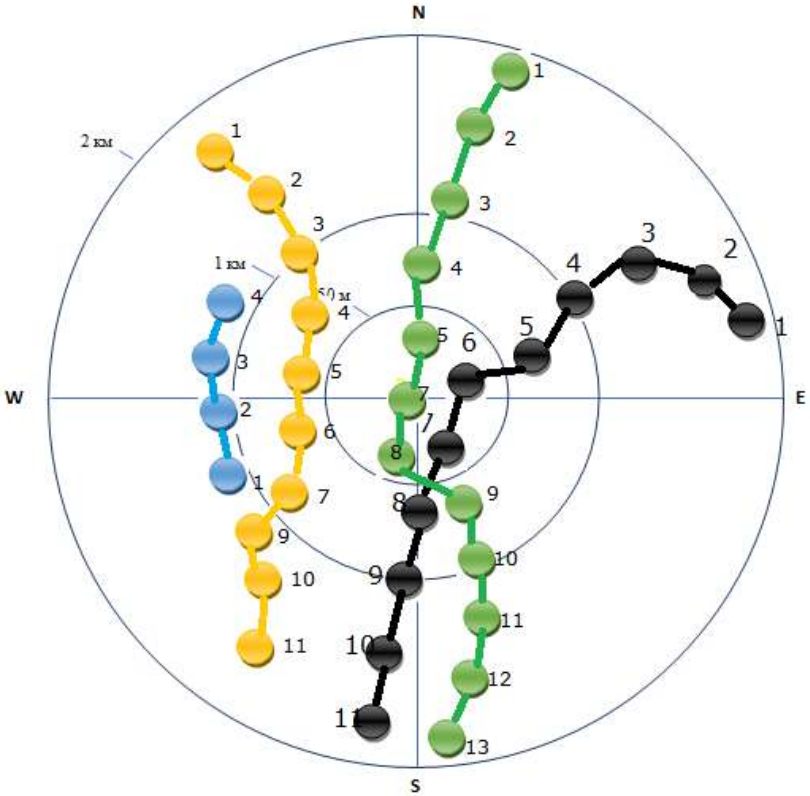


Fig. 61 Flight path (VP 2), 26.10.2020

Table 69 Target species log (VP 2), 26.10.2020

	Aquila nipalensis	**12:03**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90m	8 95m	9 95m	10 90m	11 90m		
	Circus cyaneus	**13:05**	1 40m	2 40m	3 40m	4 30m	5 35m	6 30m	7 30m	8 35m	9 35m	10 30m	11 30m		
	Aegypius monachus	**13:15**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90m	8 95m	9 95m	10 90m	11 120m	12 120m	13 120m
	Athene noctua	**14:29**	1 0m	2 10m	3 10m	4 3m									

VP. 3

Date: 26.10.2020. Start and end time: 15:18 – 18:18
Weather:
The air temperature: start 23°C end 19°C is sky half cloudy
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP.13

Date: 27.10.2020. Start and end time: 8:32 – 11:32

Weather:

The air temperature: start 19°C end 21°C cloudy.

Wind speed approx. (4-6 m/s) No precipitation

Primary species not found

VP. 12

Date: 27.10.2020. Start and end time: 11:56 – 14:56

Weather

The air temperature: start 24°C end 26°C is clear.

Wind speed approx. (4-5 m/s) No precipitation

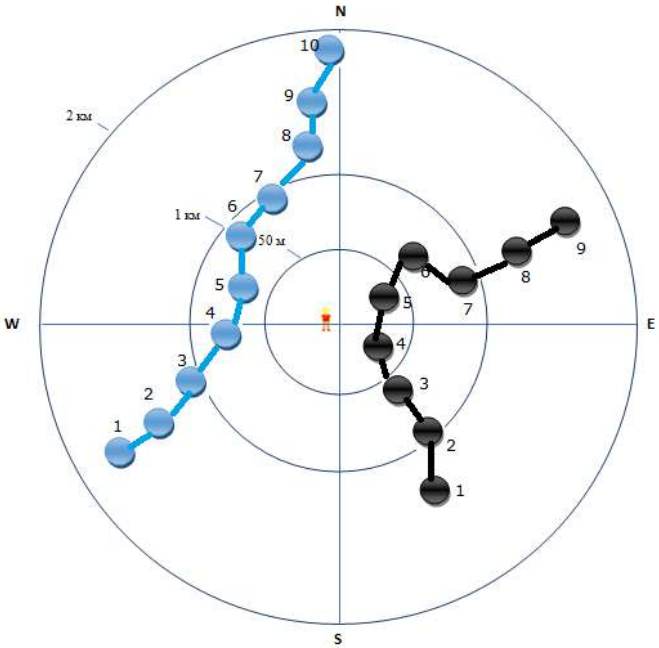


Fig. 62 Flight path (VP 12), 27.09.2020

Table 70 Target species log (VP 12), 27.10.2020

	Aquila nipalensis	**12:31**	1 95m	2 95m	3 90m	4 80m	5 75m	6 75m	7 60m	8 70m	9 90m	
	Aegypius monachus	**14:12**	1 150m	2 155m	3 150m	4 150m	5 155m	6 155m	7 150m	8 170m	9 170m	10 175m

VP.14

Date: 27.10.2020. Start and end time: 15:22 – 18:22

Weather:

The air temperature: start 24°C end 21°C cloudy.

Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP.10

Date: 28.10.2020. Start and end time: 8:22 – 11:22

Weather:

The air temperature: start 19°C end 21°C sky half cloudy.

Wind speed approx. (3-5 m/s) No precipitation

Primary species not found

VP. 11

Date: 28.10.2020. Start and end time: 11:56 – 14:56

Weather

The air temperature: start 23°C end 26°C cloudy.

Wind speed approx. (3-6 m/s) No precipitation

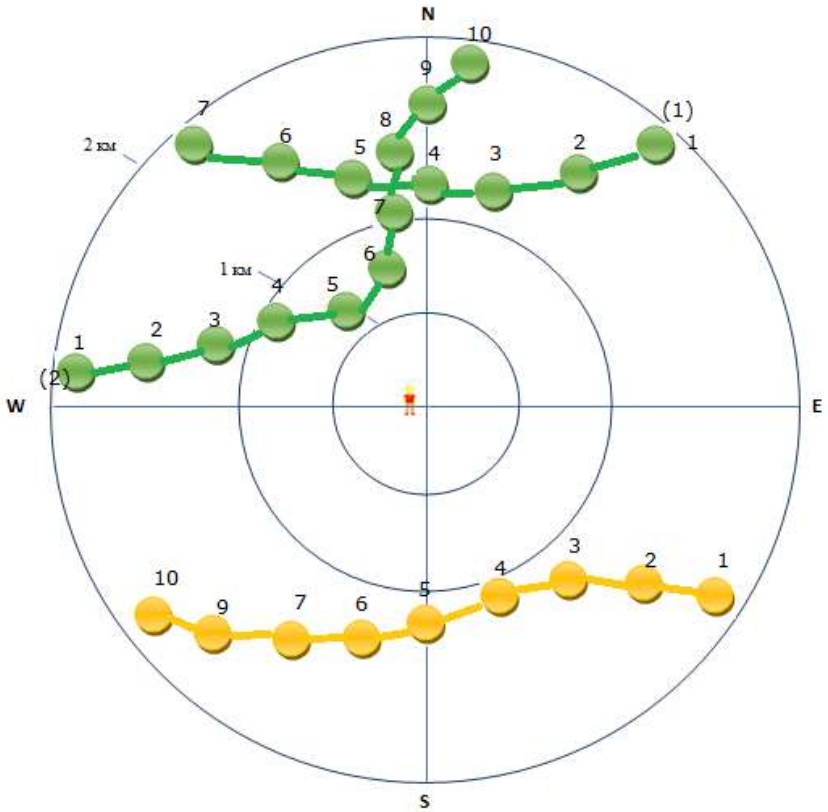


Fig. 63 Flight path (VP 11), 28.10.2020

Table 71 Target species log (VP 11), 28.10.2020

	Gyps fulvus(1)	**12:16**	1 120m	2 125m	3 120m	4 120m	5 125m	6 125m	7 130m	8 130m	9 130m	10 135m
	Gyps fulvus(2)	**13:18**	1 120m	2 125m	3 120m	4 120m	5 125m	6 125m	7 130m			
	Buteo rufinus	**13:39**	1 80m	2 75m	3 70m	4 70m	5 65m	6 55m	7 60m	8 60m	9 60m	10 65m

VP.9

Date: 28.10.2020. Start and end time: 15:23 – 18:23
Weather:
The air temperature: start 23°C end 20°C sky half cloudy
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP.7

Date: 29.10.2020. Start and end time: 8:09 – 11:09
Weather:
The air temperature: start 18°C end 22°C sky half cloudy
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP.4

Date: 29.10.2020. Start and end time: 11:39– 14:39

Weather:

The air temperature: start 23°C end 26°C is clear.

Wind speed approx. 4-6 m/s No precipitation

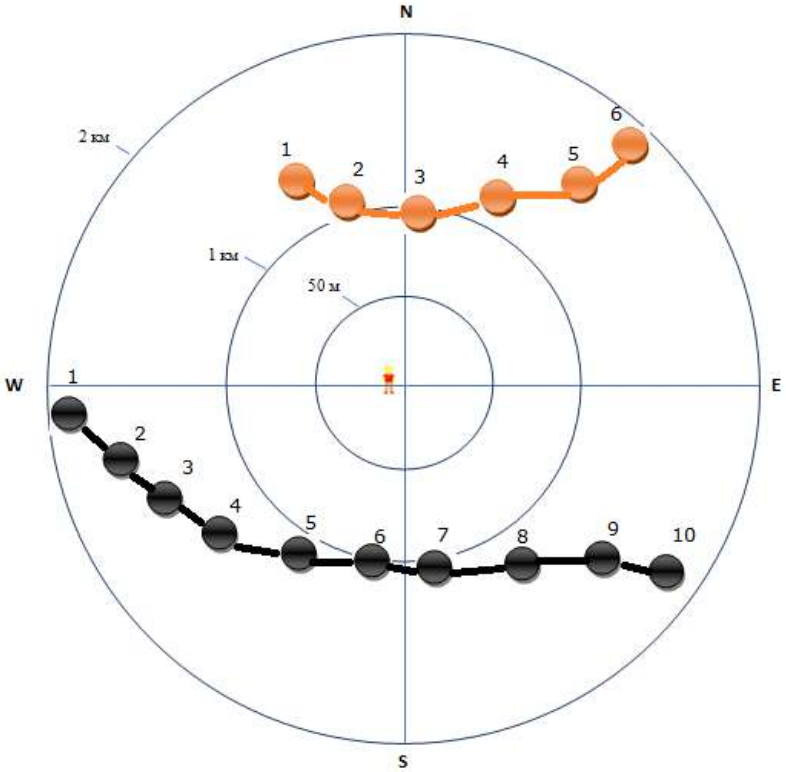


Fig. 64 Flight path (VP 4), 29.10.2020

Table 72 Target species log (VP 4), 29.10.2020

	Aquila nipalensis	**11:52**	1 95m	2 95m	3 90m	4 90m	5 95m	6 95m	7 90m	8 90m	9 90m	10 90m
	Buteo buteo	**13:24**	1 15m	2 25m	3 40m	4 40m	5 45m	6 45m				

VP. 8

Date: 29.10.2020. Start and end time: 15:05 – 18:05

Weather:

The air temperature: start 24°C end 19 °C is cloudy.

Wind speed approx. (3-5 m/s) No precipitation

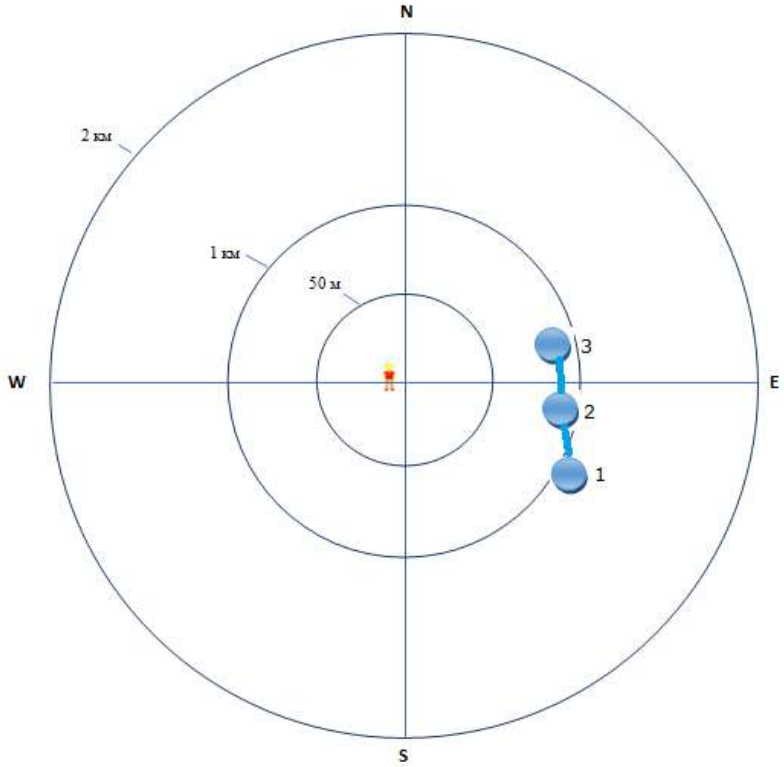


Fig. 65 Flight path (VP 8), 29.10.2020

Table 73 Target species log (VP 8), 29.10.2020

	Athene noctua	**17:21**	1 0m	2 5m	3 0m

VP survey results in November

VP. 13

Date: 01.11.2020. Start and end time: 7:25 –10:27
Weather:
The air temperature: start 10°C end 14°C sky half cloudy
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 12

Date: 01.11.2020. Start and end time: 10:41 – 13:41

Weather:

The air temperature: start 15°C end 18°C is cloudy.

Wind speed approx. (3-5 m/s)

No precipitation

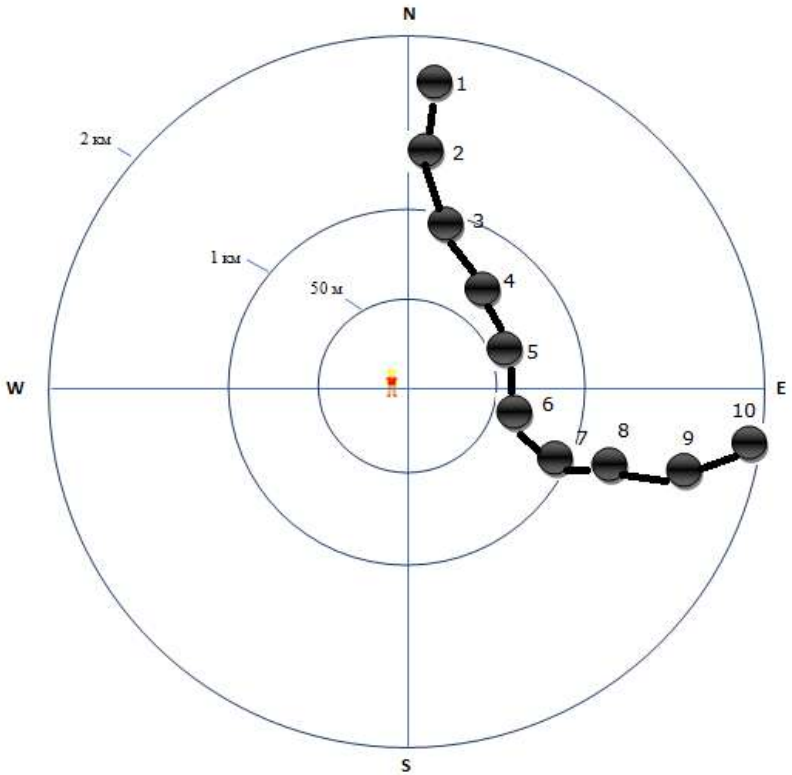


Fig. 66 Flight path (VP 12), 01.11.2020

Table 74 Target species log (VP 12), 01.11.2020

	Aquila nipalensis	**13:35**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90 m	8 95 m	9 95m	10 90 m

VP. 14

Date: 01.11.2020. Start and end time: 14:09 – 17:09
Weather:
The air temperature: start 19°C end 17°C sky half cloudy.
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP.10

Date: 02.11.2020. Start and end time: 7:26 – 10:27

Weather:

The air temperature: start14°C end 16°C cloudy.

Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP. 11

Date: 02.11.2020. Start and end time: 10:49 – 13:53

Weather

The air temperature: start 17°C end 20°C is clear

Wind speed approx. (4-5 m/s)

No precipitation

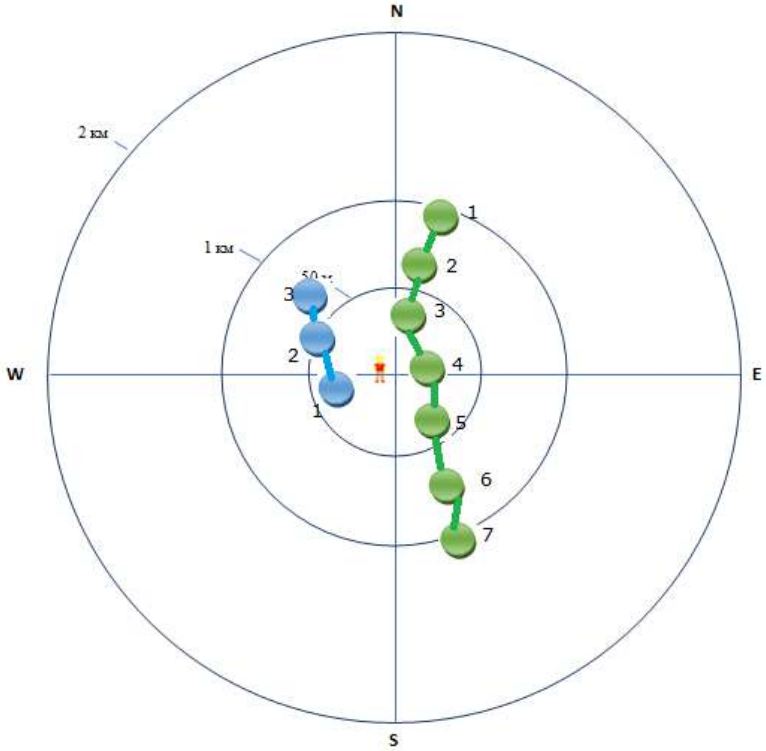


Fig. 67 Flight path (VP 11), 02.11.2020

Table 75 Target species log (VP 11), 02.11.2020

	Falco tinnunculus	**12:42**	1 35m	2 35m	3 40m	4 45m	5 45m	6 35m	7 30m
	Athene noctua	**13:11**	1 0m	2 2m	3 0m				

VP.9

Date: 02.11.2020. Start and end time: 14:12 – 17:12

Weather:

The air temperature: start 20°C end 16°C cloudy.

Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP.7

Date: 03.11.2020. Start and end time: 7:28 – 10:29

Weather:

The air temperature: start14°C end 16°C sky half cloudy.

Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP. 6

Date: 03.11.2020. Start and end time: 10:53 – 13:53

Weather

The air temperature: start 18°C end 20°C cloudy.

Wind speed approx. (5-6 m/s)

No precipitation

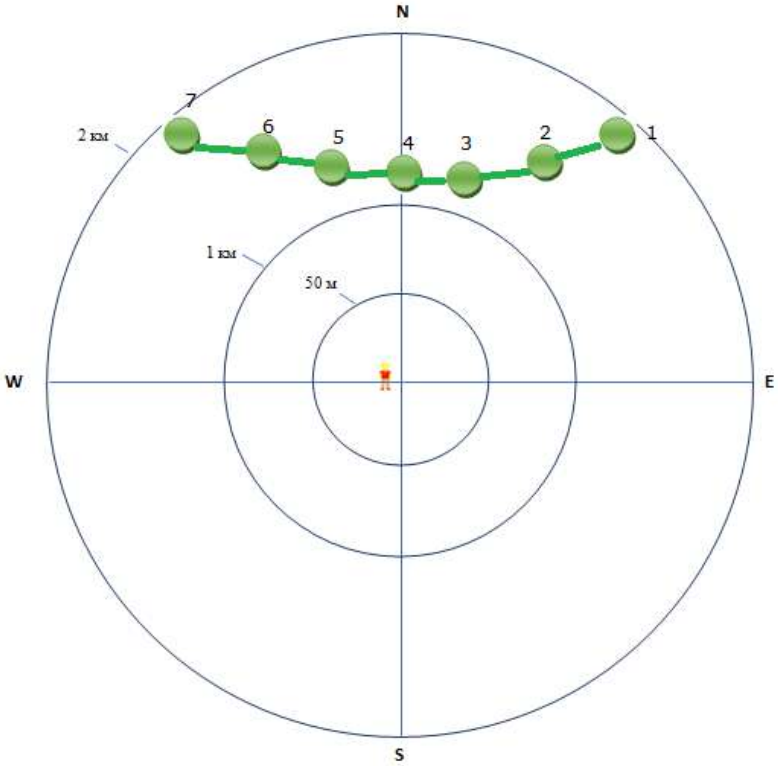


Fig. 68 Flight path (VP 6), 03.11.2020

Table 76 Target species log (VP 6), 03.11.2020

	Falco tinnunculus	**13:25**	1 20m	2 25m	3 20m	4 20m	5 25m	6 25m	7 30m

VP.8

Date: 03.11.2020. Start and end time: 14:09 – 17:11
Weather:
The air temperature: start 19°C end 14°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.1

Date: 04.11.2020. Start and end time: 7:32 – 10:32
Weather:
The air temperature: start 12°C end 14°C sky half cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.2

Date: 04.11.2020. Start and end time: 10:51– 13:51

Weather:

The air temperature: start 18°C end 19°C cloudy.

Wind speed approx. (6-7 m/s) No precipitation

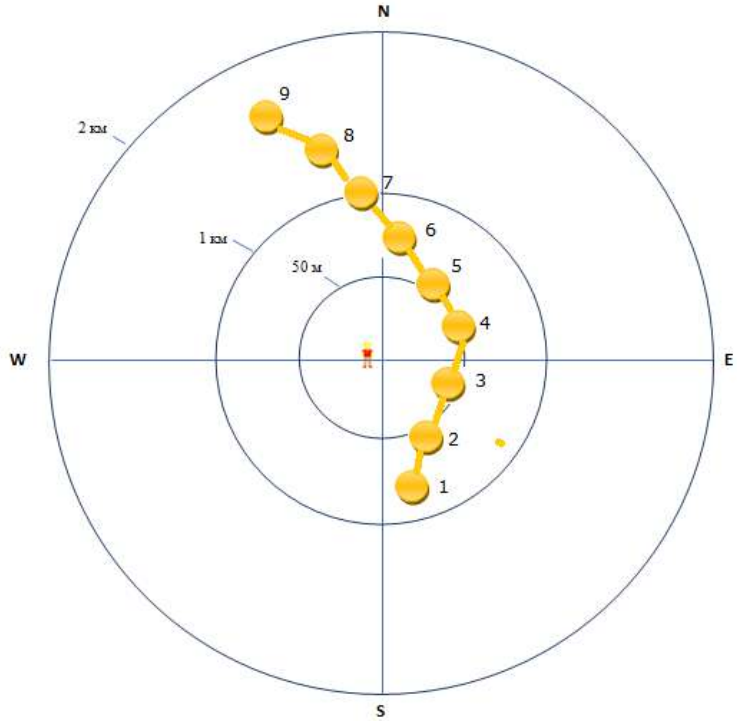


Fig. 69 Flight path (VP 2), 04.11.2020

Table 77 Target species log (VP 2), 04.11.2020

	Buteo rufinus	**13:23**	1 25m	2 25m	3 30m	4 35m	5 35m	6 35m	7 30m	8 30 m	9 30 m

VP. 3

Date: 04.11.2020. Start and end time: 14:11–17:13
Weather:
The air temperature: start 19°C end 17°C sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 12

Date: 05.11.2020. Start and end time: 7:29 – 10:29
Weather:
The air temperature: start 14°C end 17°C sky half cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.14

Date: 05.112020. Start and end time: 10:46 – 13:46

Weather:

The air temperature: start 16°C end 18°C cloudy.

Wind speed approx. (6-8 m/s) No precipitation

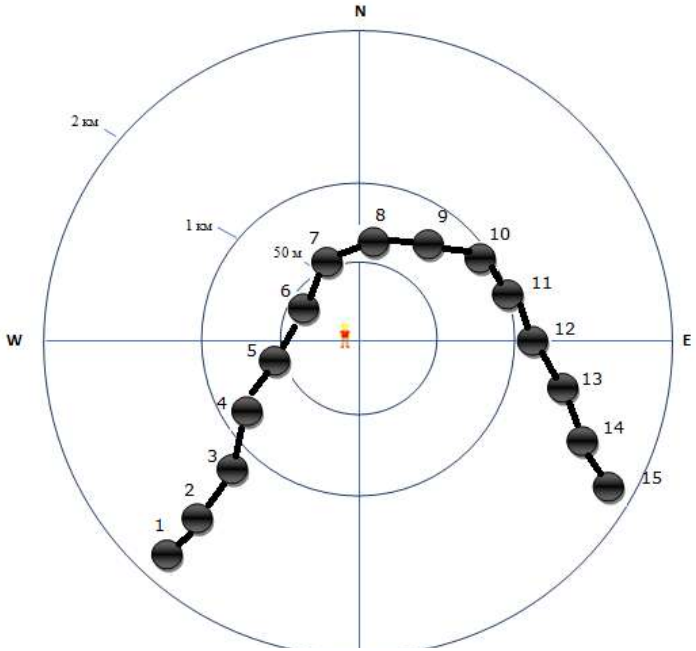


Fig. 70 Flight path (VP 14), 05.11.2020

Table 78 Target species log (VP 14), 05.11.2020

	Aquila nipalensis	**12:57**	1 140m	2 140m	3 145m	4 145m	5 415m	6 150m	7 150m	8 150m	9 145m	10 145m	11 150m	12 150m	13 150m	14 145m	15 145m

VP. 13

Date: 05.11.2020. Start and end time: 14:06 – 17:10
Weather:
The air temperature: start 18°C end 15°C sky half cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 8

Date: 06.11.2020. Start and end time: 7:38 – 10:38
Weather:
The air temperature: start 14°C end 16°C sky half cloudy
Wind speed approx. (7-9 m/s) No precipitation
Primary species not found

VP. 6

Date: 06.11.2020. Start and end time: 10:54 – 13:55

Weather:

The air temperature: start 18°C end 21°C sky half cloudy

Wind speed approx. (5-7 m/s) No precipitation

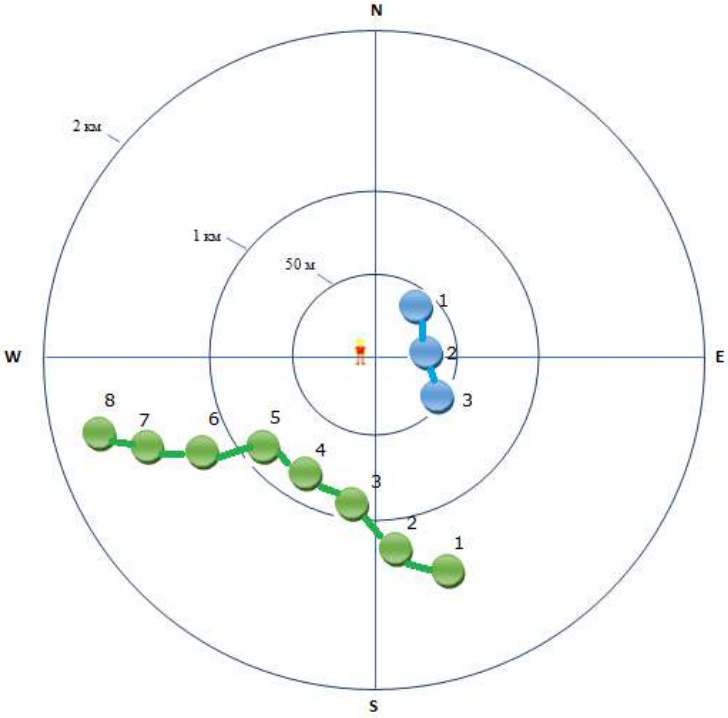


Fig. 71 Flight path (VP 6), 06.11.2020

Table 79 Target species log (VP 6), 06.11.2020

	Falco tinnunculus	**12:09**	1 30m	2 20m	3 20m	4 25m	5 15m	6 20m	7 25m	8 25m
	Athene noctua	**13:46**	1 0m	2 10m	3 0m					

VP.5

Date: 06.11.2020. Start and end time: 14:12– 17:14
Weather:
The air temperature: start 17°C end 15°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.10

Date: 07.11.2020. Start and end time: 7:46– 10:46
Weather:
The air temperature: start 14°C end 16°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.9

Date: 07.11.2020. Start and end time: 10:58 – 13:59

Weather:

The air temperature: start 17°C end 19°C is cloudy.

Wind speed approx. (4-6 m/s) No precipitation

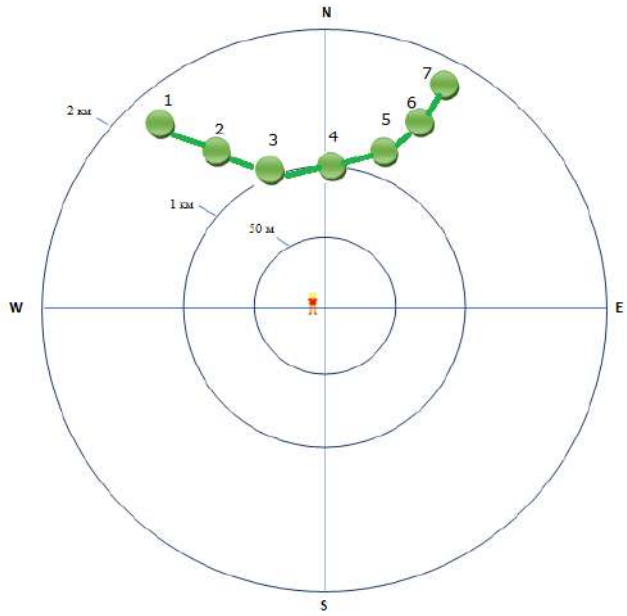


Fig. 72 Flight path (VP 9), 07.11.2020

Table 80 Target species log (VP 9), 07.11.2020

	Gyps fulvus	**12:28**	1 180m	2 175m	3 180m	4 185m	5 175m	6 170m	7 175m

VP. 11

Date:07.11.2020. Start and end time: 14:13– 17:14
Weather:
The air temperature: start 19°C end 16°C sky half cloudy.
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 12

Date:10.11.2020. Start and end time: 9:16 – 12:16
Weather:
The air temperature: start 11°C end 15°C sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP 13

Date: 10.11.2020. Start and end time: 12:56 – 15:56

Weather:

The air temperature: start 15°C end 10°C sky half cloudy.

Wind speed approx. (6-8 m/s) No precipitation

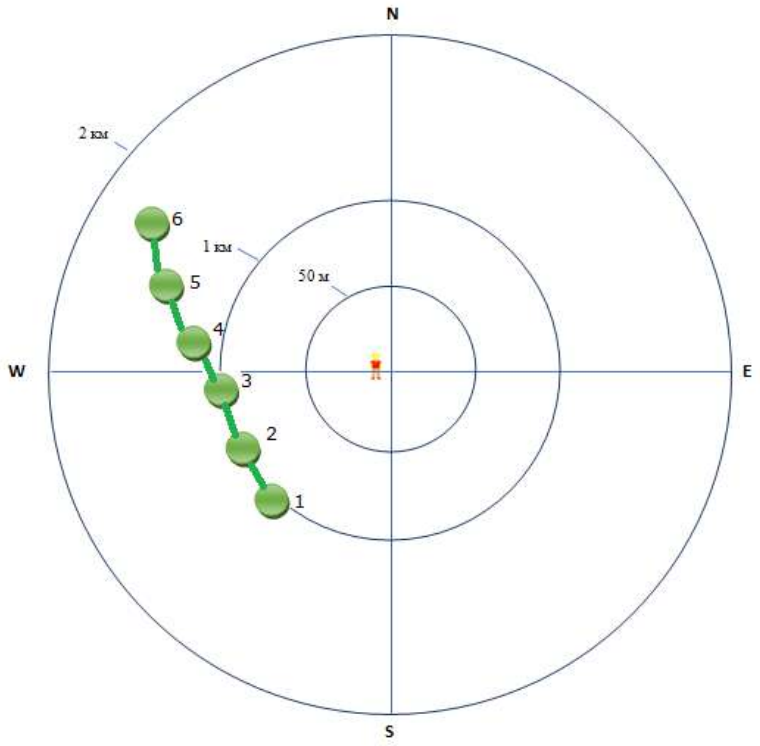


Fig. 73 Flight path (VP 13), 10.11.2020

Table 81 Target species log (VP 13), 10.11.2020

	Falco tinnunculus	**14:28**	1 40m	2 35m	3 40m	4 35m	5 25m	6 20m

VP.7

Date: 11.11.2020. Start and end time: 9:42 – 12:42
Weather:
The air temperature: start 9°C end 15°C sky completely cloudy
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.8

Date: 11.11.2020. Start and end time: 13:22 – 16:22
Weather:
The air temperature: start 15°C end 10°C sky completely cloudy
Wind speed approx. (4-6 m/s) No precipitation

Primary species not found

VP. 13

Date: 12.11.2020. Start and end time: 10:16 – 13:16

Weather:

The air temperature: start 3°C end 9°C is cold

Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP. 14

Date: 12.11.2020. Start and end time: 13:58 – 16:58

Weather:

The air temperature: start 9°C end 7°C is cold

Wind speed approx. (6-7 m/s) No precipitation

Primary species not found

VP. 5

Date: 13.11.2020. Start and end time: 9:58 – 12:58
Weather:
The air temperature: start 3°C end 8°C sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 6

Date: 13.11.2020. Start and end time: 13:34 – 16:34
Weather:
The air temperature: start 3°C end 8°C sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 12

Date: 14.11.2020. Start and end time: 10:34 – 13:34

Weather:

The air temperature: start 3°C end 9°C sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP. 14

Date: 14.11.2020. Start and end time: 14:05 – 17:05

Weather:

The air temperature: start 9°C end 6 °C sky completely cloudy.

Wind speed approx. (3-5 m/s) No precipitation

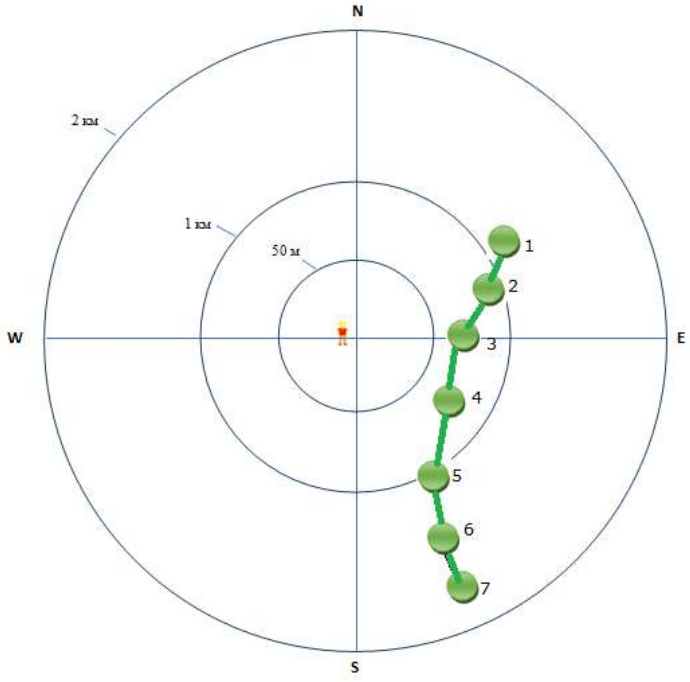


Fig. 74 Flight path (VP 14), 14.11.2020

Table 82 Target species log (VP 14), 14.11.2020

	Buteo buteo	**14:21**	1 0m	2 15m	3 20m	4 25m	5 35m	6 30m	7 35m

VP. 1

Date: 15.11.2020. Start and end time: 10:47 – 13:47
Weather:
The air temperature: start 2 °C end 7 °C cold
Wind speed approx. (10-12 m/s) No precipitation
Primary species not found

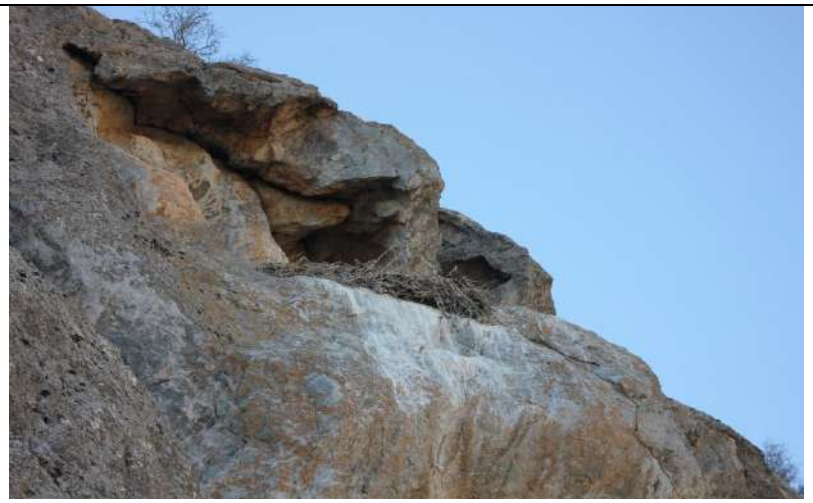
VP. 4

Date: 15.11.2020. Start and end time: 14:22 – 17:07
Weather:
The air temperature: start 7°C end 3 °C cold
Wind speed approx. (8-9 m/s) No precipitation
Primary species not found

ATTACHMENTS

Photos from Aktau Mount IBA survey

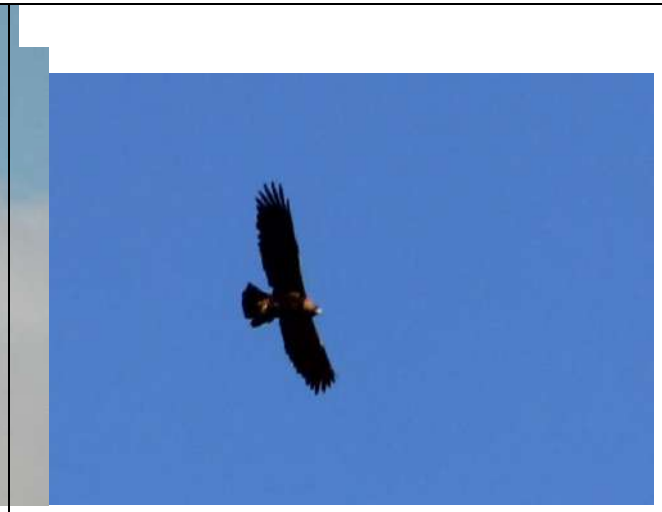
A new nest (1) on IBA territory (Mount Aktau) found in October 41°39'7.50"C, 64°25'34.40"B

	
Nest (2) 41°39'24.24"C, 64°28'8.71"B	Nest (2) 41°39'24.24"C, 64°28'8.71"B
Nest (3) 41°39'39.70"C, 64°26'25.09"B	Nest (4) 41°39'20.91"C,64°27'1.58"B

41°36'40.96"C, 64°30'21.93"B	41°39'57.02"C, 64°30'57.42"B	41°39'18.47"C, 64°30'1.27"B

41°38'49.85"C, 64°31'52.58"B	41°37'37.54"C, 64°30'30.96"B

Vulpes vulpes karagan – Fox.

		
Alectoris chukar - Chukar Partridge	*Aegypius monachus* - Cinereous Vulture	*Aquila chrysaetos* - Golden Eagle

Gyps fulvus-Eurasian Griffon	*Circus cyaneus*-Hen (Northern) Harrier	*Falco cherrug*-SakerFalcon

Haliaeetus albicilla-White-tailed eagle	*Gazella subgutturosa* - Goitered Gazelle *41°39'25.57"C, 64°24'54.22"B*

Falco cherrug - Saker falcon	*Falco tinnunculus* - Common Kestrel

41°38'43.12"C, 41°38'43.12"C

WINTER QUARTERLY BIRD MONITORING REPORT

ZARAFSHAN WIND FARM PROJECT:

CLIENT: WOOD GROUP

Date: March 2021

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United Kingdom, EC3V 9DF
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This report is prepared by: Juru Energy Date: _____

CHECKED BY _____ Date: _____

APRROVED BY _____ Date: _____

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INTRODUCTION

The Zarafshan Wind Farm Project is being developed by Wood Group. Juru Energy provides local support for ESIA for the Zarafshan Wind Project in Uzbekistan.

In the framework of the Zarafshan Wind Farm Project, bird survey was conducted in the project area in Winter 2020/2021 (November 16, 2020 – March 10, 2021). The purpose of ornithological monitoring was to conduct systematic field studies at specific vantage points to assess bird species composition that occur within the project's area of influence, its abundance and territorial distribution, the nature of the stay, and daily activity of birds during winter period and also to identify birds that are of conservation interest under IUCN and Uzbekistan Redlist.

This report is a statement of work made by Juru Enery` local ornitologists Alisher Atakhodjaev and R.A. Sohibnazarov. However, it should be noted that help in collecting survey material was also provided by the company's employees, and expedition members.

SURVEY METHODS

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The range of detection and identification of large species as golden eagles was up to 2 km, and small passerines 50 m. Directions and flight altitude were taken into account.

The observations were carried out at 14 Vantage points (Table 2). The number and location of Vantage points for stationary observation in the project area have been agreed with the company employees and international expert. The points are located so as to cover the territory as completely as possible (Fig.1).

The duration of one bird count at each Vantage point (VP) was 3 hours. The total duration of all the observations in the territory was **504 hours** (Table 3).

During observations weather conditions such as wind speed and direction, and air temperature were recorded. Wind speed and air temperature were measured using an anemometer. Whenever possible, the number of species, approximate flight altitude, speed, and flight direction of each target species were recorded every 15 seconds.

During the observations, photographing and short video shooting of birds were carried out, which is used to confirm the correct determination of species and obtain additional data on the number of individuals. Following equipment was used: binoculars (Viking) with 10x zoom; cameras (Nikon P1000, Canon 550D) with 24x and 50x zoom, with focal length of 550 mm and 1200 mm, respectively; field telescope (Viking).

Target and Secondary Species

Target species (shown below) represent the species of greatest sensitivity and/or conservation concern. Those species are the focus of the VP surveys and observations of target species will always take priority over completion of secondary species activity summaries.

List of Bird Families that include Target Species

- Anseriformes – Swans, Geese and Ducks
- Otidiformes – Bustards
- Gruidae – Cranes

- Rallidae – Crakes and Rails
- Phalacrocoracidae - Cormorants
- Pelecanidae – Pelicans
- Ardeidae – Herons, Egrets and Bitterns
- Threskiornithidae – Ibis and Spoonbill
- Ciconiidae – Storks
- Charadriiformes – Waders
- Accipitriformes – Osprey, Eagles, Vultures, Hawks, Buzzards etc.
- Falconidae – Falcons
- Strigiformes - Owls

The Target Species list is based upon current knowledge and is not exhaustive and will be added to as appropriate as further species information is gathered on site and presence of species of particular conservation interest and/or risk from wind farm developments is noted.

In addition to undertaking VP surveys for target species, all other species will be noted on the back of survey forms. Information will include species, number of birds recorded, activity and approximate location in relation to the project area.

List of Bird Families that include Secondary Species

- Laridae – Gulls and Terns
- Strisores – Nightjars and Swifts
- Coraciiformes – Bee-eaters and Rollers
- Sturnidae - Starlings
- Alaudidae – Larks
- Hirundinidae – Swallows and Martins

TERRITORY DESCRIPTION

The territory intended for the construction of the Zarafshan wind farm is located in the South-Western part of Uzbekistan, in the Navoi region, Tamda district (Fig. 1). Aktau mountains located on the northern side of the project area; Azhyrykty village and Tamdy town are in the North-East.

VANTAGE POINTS

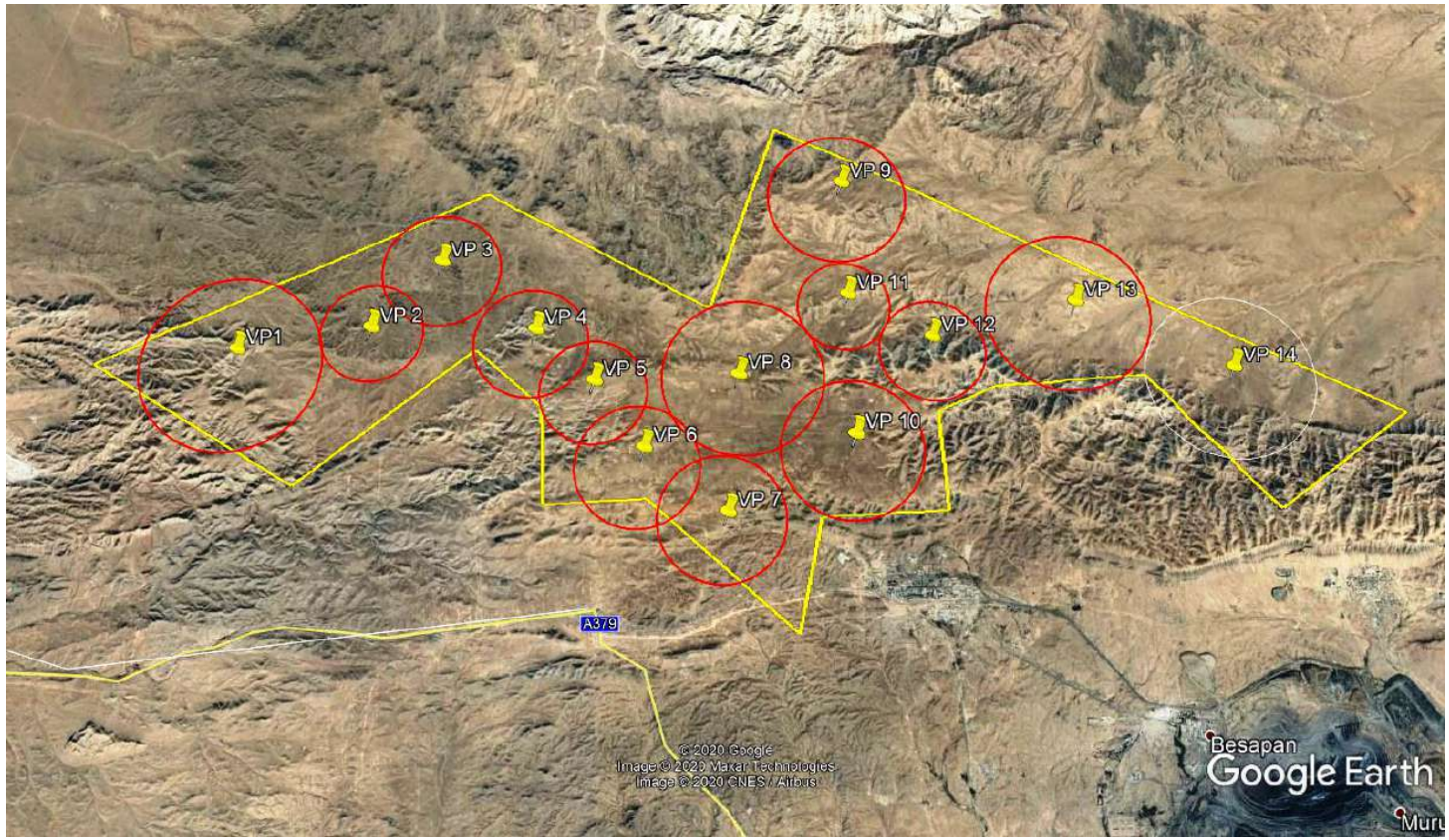


Fig. 1 Vantage Points locations

The number of Vantage Points was agreed with the Client. Points are located so as to cover the project territory as fully as possible. The coordinates of the Vantage Points of Zarafshan are shown in Table 2. The radius of a single observation point is 2 km. Time spent at one point is 3 hours' average.

Table 1 Coordinates of the VPs of Zarafshan project territory

Vantage Points	Coordinates
VP 1	41.582349° 64.319863°
VP 2	41.585587° 64.354108°
VP 3	41.598941° 64.372037°
VP 4	41.583273° 64.396787°
VP 5	41.572261° 64.411438°
VP 6	41.558646° 64.423624°
VP 7	41.545439° 64.443781°
VP 8	41.572008° 64.448397°
VP 9	41.611622° 64.478777°
VP 10	41.559152° 64.476963°
VP 11	41.587621° 64.477994°
VP 12	41.577904° 64.498747°
VP 13	41.584269° 64.537449°
VP 14	41.569329° 64.576066°

Table 2 Total Number of Winter VP survey hours

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14	Total
Total hours															
November hr	3	3	3	3	3	3	3	3	3	3	3	3	3	3	42
December hr	9	9	9	9	9	9	9	9	9	9	9	9	9	9	126
January hr	9	9	9	9	9	9	9	9	9	9	9	9	9	9	126
February hr	12	12	12	12	12	12	12	9	9	12	9	9	9	9	150
March hr	3	3	3	3	3	3	3	6	6	3	6	6	6	6	60
accounts for Winter	36	36	36	36	36	36	36	36	36	36	36	36	36	36	**504**

BIRD OBSERVATIONS RESULTS

Table 3 Results of bird observations in November, 2020

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle				1		1								1	EN	2 (VU:D)	NMW
2.	*Gyps fulvus*	Eurasian Griffon															NT	2 (VU:D)	R
3.	*Buteo rufinus*	Long-legged Buzzard															LC	-	NMW
4.	*Buteo buteo*	Common Buzzard															LC	-	MW
5.	*Falco tinnunculus*	Common Kestrel				1				2				1			LC	-	NMW
6.	*Athene noctua*	Little Owl				1								1			-	-	R
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	5					7									-	-	R

2.	*Corvus ruficollis*	Brown-necked Raven															-	-	R
3.	*Corvus cornix*	Eurasian Hooded Crow	2	6												2	-	-	MW
4.	*Corvus frugilegus*	Eurasian Rook		4										3	2	3	-	-	RMW
5.	*Pica pica*	Magpie															-	-	R
6.	*Oenanthe finschii*	Black-necked Wheatear														1	-	-	RMW
7.	*Oenanthe isabellina*	Isabelline Wheatear				2								1			-	-	BM
8.	*Columba livia*	Rock Dove															-	-	R
9.	*Galerida cristata*	Crested Lark		2	1			2	7	3			5	4	4	6	-	-	R
10.	*Calandrella rufescens*	Lesser Short-toed Lark				12	35		4					5	2		-	-	NMW
11.	*Calandrella cinerea*	Red-capped Lark															-	-	NM
12.	*Melanocorypha calandra*	Calandra Lark				30	14	3	42								-	-	NMW
13.	*Melanocorypha leucoptera*	White-winged Lark							120		90						-	-	MW
14.	*Turdus*	Black-throated				4	4		3								-	-	MW

	atrogularis	Thrush																	
15.	*Rhodospiza obsoleta*	Black-billed Desert Finch				16			5								-	-	R
16.	*Scotocerca inguieta*	Streaked Scrub Warbler						2									-	-	R
17.	*Fringilla coelebs*	Chaffinch													2	2	-	-	MW
18.	*Phylloscopus collybita*	Chiffchaff						1									-	-	MW

Table 4 Results of bird observations in December, 2020

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle				1			1		1		1			1	EN	2 (VU:D)	NMW
2.	*Neophron percnopterus*	Egyptian Vulture															EN	2 (VU:D)	NMW
3.	*Aegypius monachus*	Cinereous Vulture		1										2			NT	3 (NT)	**R**
4.	*Gyps fulvus*	Eurasian Griffon		2										2			NT	2 (VU:D)	**R**
5.	*Gypaetus barbatus*	Lammergeier				1											NT	2 (VU:R)	**R**
6.	*Buteo rufinus*	Long-legged Buzzard															LC	-	NMW
7.	*Buteo buteo*	Common Buzzard															LC	-	MW
8.	*Circus cyaneus*	Hen Harrier				1	1										LC	-	MW
9.	*Falco cherrug*	Saker Falcon									1						EN	1 (EN)	RW
10.	*Falco naumanni*	Lesser Kestrel			2												LC	3 (NT)	**BM**
11.	*Falco tinnunculus*	Common Kestrel		2			1	1	2							2	LC	-	NMW

12.	*Athene noctua*	Little Owl		1					1		1	1				1	LC	-	**R**
13.	*Haliaeetus albicilla*	White-tailed Sea-eagle										1					LC	2 (VU:R)	NMW
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	5	6		11		2						6	5		-	-	R
2.	*Corvus ruficollis*	Brown-necked Raven							1			1					-	-	R
3.	*Corvus cornix*	Eurasian Hooded Crow	4	9	3				3					3	17	12	-	-	MW
4.	*Corvus frugilegus*	Eurasian Rook	5	21				7	13			2				4	-	-	RMW
5.	*Pica pica*	Magpie														1	-	-	R
6.	*Oenanthe finschii*	Black-necked Wheatear					3	3	2			2	1				-	-	RMW
7.	*Oenanthe isabellina*	Isabelline Wheatear	2			2	1	4	3			2	3		1		-	-	BM
8.	*Columba livia*	Rock Dove															-	-	R
9.	*Galerida cristata*	Crested Lark	2	3	1	3	4	7	11	5	1	2	2	3	1	2	-	-	R

10.	*Calandrella rufescens*	Lesser Short-toed Lark			6		4	14	36	23	15	8	4	5	7		-	-	NMW
11.	*Melanocorypha calandra*	Calandra Lark				2	3	2		5							-	-	NMW
12.	*Melanocorypha leucoptera*	White-winged Lark			40	35		28	60	140	68	120	260				-	-	MW
13.	*Sitta tephronota*	Greater Rock Nuthatch												1			-	-	R
14.	*Turdus atrogularis*	Black-throated Thrush												18			-	-	MW
15.	*Rhodospiza obsoleta*	Black-billed Desert Finch			4	7	3				11						-	-	R
16.	*Scotocerca inguieta*	Streaked Scrub Warbler				2	2										-	-	R
17.	*Fringilla coelebs*	Chaffinch		2	7	13	3	1							1	2	-	-	MW
18.	*Phylloscopus collybita*	Chiffchaff															-	-	MW

Table 5 Results of bird observations in January, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle								1		1		1			EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle		1		2				1	1		1	1		2	LC	2 (VU:D)	NMW
3.	*Neophron percnopterus*	Egyptian Vulture															EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture						1			1				1		NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon							1		1						NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier															NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard		2		1								1			LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard												1			LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier								1							LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon									1	1					EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**

12.	*Falco tinnunculus*	Common Kestrel		2		2	1	1		1	1			3			LC	-	**NMW**
13.	*Athene noctua*	Little Owl	1							1		1					LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle	2				1										LC	2 (VU:R)	**NMW**
15.	*Chlamydotis macqueenii*	Asian Houbara									1						CR	2 (VU:R)	M
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge		5		7								12	8		-	-	**R**
2.	*Corvus ruficollis*	Brown-necked Raven															-	-	**R**
3.	*Corvus cornix*	Eurasian Hooded Crow		5	3				3				14	1	7	4	-	-	**MW**
4.	*Corvus frugilegus*	Eurasian Rook		6		4	2	4	2			3	4	7	6	11	-	-	**RMW**
5.	*Pica pica*	Magpie				2			2				1				-	-	**R**
6.	*Oenanthe finschii*	Black-necked Wheatear			1	2	1	1	1	3	2	4		2		2	-	-	**RMW**
7.	*Oenanthe isabellina*	Isabelline Wheatear	1	2	3	1	6	4	3	3	1	5	3	2	4	2	-	-	**BM**

8.	*Columba livia*	Rock Dove							37								-	-	**R**
9.	*Galerida cristata*	Crested Lark	1	3	5	4	2	5	13	8	1	4	2	4	1	5	-	-	**R**
10.	*Calandrella rufescens*	Lesser Short-toed Lark			2	4	5	7	13	11	8	8	2	1	2	5	-	-	**NMW**
11.	*Melanocorypha calandra*	Calandra Lark							1	2							-	-	**NMW**
12.	*Melanocorypha leucoptera*	White-winged Lark			60			130	80		280	350	110				-	-	**MW**
13.	*Sitta tephronota*	Greater Rock Nuthatch												2			-	-	**R**
14.	*Turdus atrogularis*	Black-throated Thrush			4												-	-	**MW**
15.	*Rhodospiza obsoleta*	Black-billed Desert Finch		3				9			14						-	-	**R**
16.	*Scotocerca inguieta*	Streaked Scrub Warbler															-	-	**R**
17.	*Fringilla coelebs*	Chaffinch	3	5		2	12	3	1				2	5		1	-	-	**MW**
18.	*Phylloscopus collybita*	Chiffchaff															-	-	**MW**

Table 6 Results of bird observations in February, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle										2		1			EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle		4		2			1			1	1	2	1	4	LC	2 (VU:D)	NMW
3.	*Neophron percnopterus*	Egyptian Vulture															EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture									1						NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon									2						NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier										1					NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard	2	1		5					1			1			LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard	1				1						1				LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier	1														LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon					1	1			1						EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**

12.	*Falco tinnunculus*	Common Kestrel						2	1		2	2			1	1	LC	-	**NMW**
13.	*Athene noctua*	Little Owl			1			1				1					LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle	2			2											LC	2 (VU:R)	**NMW**
15.	*Chlamydotis macqueenii*	Asian Houbara															CR	2 (VU:R)	M
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge	3	2		11	5							5			-	-	**R**
2.	*Corvus ruficollis*	Brown-necked Raven							2								-	-	**R**
3.	*Corvus cornix*	Eurasian Hooded Crow	3	3							4	8		2	7	3	-	-	**MW**
4.	*Corvus frugilegus*	Eurasian Rook		3	2	5	12	3	4	22	6	2	3	3	9	2	-	-	**RMW**
5.	*Pica pica*	Magpie				3		2									-	-	**R**
6.	*Oenanthe finschii*	Black-necked Wheatear	1	1	3	2	1	2	4	3	1		2		3	2	-	-	**RMW**
7.	*Oenanthe isabellina*	Isabelline Wheatear		3	2	3	1	4	2	2	5	3	1	4	4	2	-	-	**BM**

8.	*Columba livia*	Rock Dove							16			12					-	-	**R**
9.	*Galerida cristata*	Crested Lark	2	4	3	11	4	5	3	4	7	14	6	5	7	4	-	-	**R**
10.	*Calandrella rufescens*	Lesser Short-toed Lark	2	3	1	8	5			6	8	3	5	3	3	4	-	-	**NMW**
11.	*Melanocorypha calandra*	Calandra Lark															-	-	**NMW**
12.	*Melanocorypha leucoptera*	White-winged Lark									22						-	-	**MW**
13.	*Sitta tephronota*	Greater Rock Nuthatch	1											2			-	-	**R**
14.	*Turdus atrogularis*	Black-throated Thrush															-	-	**MW**
15.	*Rhodospiza obsoleta*	Black-billed Desert Finch					3							3	4	7	-	-	**R**
16.	*Scotocerca inguieta*	Streaked Scrub Warbler			3		1						1	1			-	-	**R**
17.	*Fringilla coelebs*	Chaffinch		3	4					3	2	5		4	2		-	-	**MW**
18.	*Phylloscopus collybita*	Chiffchaff															-	-	**MW**
19.	*Upupa epops*	Hoopoe			2												-	-	**NMW**

Table 7 Results of bird observations in March, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle															EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle		1	1				2	1				1		1	LC	2 (VU:R)	**R**
3.	*Neophron percnopterus*	Egyptian Vulture															EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture									1						NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon									2						NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier															NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard		1		2					1			2			LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard								1							LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier															LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon												1			EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**
12.	*Falco tinnunculus*	Common Kestrel	1				1								1	2	LC	-	**NMW**

13.	*Athene noctua*	Little Owl					1								1	1	LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle	1											1			LC	2 (VU:R)	**NMW**
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
1.	*Alectoris chukar*	Chuckar partridge		5		7								4			-	-	**R**
2.	*Corvus cornix*	Eurasian Hooded Crow	3	4											2	3	-	-	**MW**
3.	*Corvus frugilegus*	Eurasian Rook		11				4	6							3	-	-	**RMW**
4.	*Pica pica*	Magpie							3								-	-	**R**
5.	*Oenanthe finschii*	Black-necked Wheatear		1				2	2					1	2	1	-	-	**RMW**
6.	*Oenanthe isabellina*	Isabelline Wheatear				2	2	1	2				1	2	2	1	-	-	**BM**
7.	*Columba livia*	Rock Dove														24	-	-	**R**
8.	*Galerida cristata*	Crested Lark	2	1	1	2	3	2	3	1	2	2	2	3	1	1	-	-	**R**
9.	*Calandrella rufescens*	Lesser Short-toed Lark							7	11	2			3	2	5	-	-	**NMW**

10.	*Melanocorypha calandra*	Calandra Lark															-	-	**NMW**
11.	*Melanocorypha leucoptera*	White-winged Lark															-	-	**MW**
12.	*Sitta tephronota*	Greater Rock Nuthatch	1											1			-	-	**R**
13.	*Turdus atrogularis*	Black-throated Thrush	3										6				-	-	**MW**
14.	*Rhodospiza obsoleta*	Black-billed Desert Finch			3	4	3			2	7				5		-	-	**R**
15.	*Scotocerca inguieta*	Streaked Scrub Warbler															-	-	**R**
16.	*Fringilla coelebs*	Chaffinch		1	4	3								2	2		-	-	**MW**

WINTER TRANSECTS

During the site visits, the existing country roads on the project territory were used for driven and walked winter transects. While performing transect surveys, the car was driven at a low speed. The detection range for small bird species was 50 meters, and for large bird species was up to 1 km. The roads are unpaved, rocky in places. Local shepherds or geologists use these country roads. Some sections of the roads are difficult to pass, espessially after heavy precipitation.

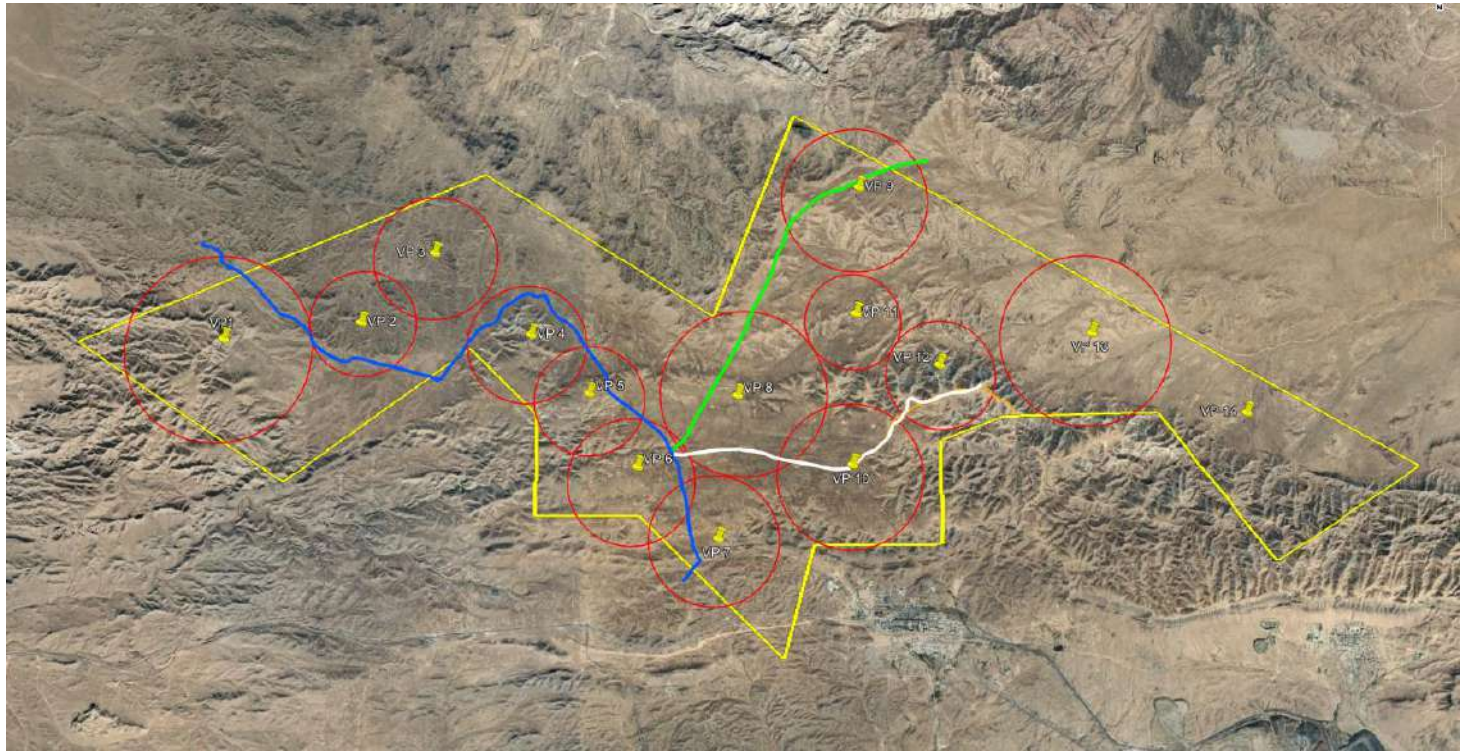


Fig. 2. Winter transects on the Zarafshan WF project territory (blue line – Transect №1; white line - Transect №2; green line - Transect №3)

Transect №1

The survey was performed on December 9, 2020, along the road that runs from the north-west to the south-east of the Zarafshan project territory. The transect was driven by car with stops, in some places where visibility from the car was limited, the walking route was taken. The weather was cold, 0/+2°C, cloudy, without precipitation. The wind speed was 6-8 m/s. The survey started at 9:20 am and ended at 11:40 am. The length of the transect was 17 km. Windy and cold weather prevented most of the birds to leave their shelters, and therefore no large birds of prey we observed on the route. Only near VP 6 on the power line there was one individual of the Common Kestrel – *Falco tinnunculus*.

Results of the survey on December 9, 2020:

1. *Athene noctua* 1
2. *Galerida cristata* 21
3. *Melanocorypha leucoptera* 80
4. *Fringilla coelebs* 5
5. *Oenanthe isabellina* 8
6. *Alectoris chukar* 7
7. *Corvus frugilegus* 12

Transect №2

The survey was performed on January 17, 2021, along the road from the central part of the project territory to the eastern side. The air temperature was about 0°C, sunny, but cold. The wind speed was 4-6 m/s, at times 6-8 m/s. The survey started at 13:50 pm and ended at 15:10 pm. The route was 7.5 km long. In the afternoon the activity of birds increased and we observed several species of predators.

Results of the survey on January 17, 2021:

1. *Buteo buteo* 1
2. *Aquila chrysaetos* 1
3. *Buteo rufinus* 1
4. *Corvus cornix* 5
5. *Corvus frugilegus* 4
6. *Oenanthe finschii* 2
7. *Oenanthe isabellina* 3
8. *Galerida cristata* 6
9. *Melanocorypha leucoptera* 38

Transect №3

The survey was performed on February 25, 2021 along the road from the central part of the project territory to the northern side. Air temperature was+2/+4°C, cloudy, the wind speed was 4-6 m/s. The survey started at 10:15 am and ended at 11:30 am. The route was about 9 km. During the transect survey we observed several species of predators and small birds.

Results of the survey on February 25, 2021:

1. *Aquila chrysaetos* 2
2. *Gyps fulvus* 1
3. *Falco tinnunculus* 1
4. *Corvus ruficollis* 1
5. *Corvus frugilegus* 3
6. *Galerida cristata* 8
7. *Oenanthe isabellina* 5
8. *Oenanthe finschii* 2
9. *Rhodospiza obsoleta* 14

Note: during the transect surveys the activity of birds (especially small passerines) was higher than on the VPs.

CONCLUSIONS

The observations for Zarafshan Wind Farm project were carried out according to the methodology described in Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The observations were carried out at 14 Vantage points. The total duration of all the observations in the territory in the Winter season was **504 hours**. The weather conditions during VP observations were also recorded: cloud coverage, precipitation, air temperature, wind speed and direction.

Main conclusions of the winter observations:

In winter, the territory was quite cold, the temperature dropped to -12°C below zero, and the wind speed reached 8 m/s, sometimes up to 10-12 m/s, so birds in most cases appeared in the afternoon. In the first half of the day, mostly falcons such as Kestrel and Saker Falcon were encountered. In winter, the large birds of prey included the Golden Eagle, Eurasian Griffon, Lammergeier, Cinereous Vulture, and Steppe Eagle were observed on the site. Also, the White-tailed Sea-eagle, which is not typical for this area, was found on the territory, wintering or possibly flying over the territory. We regularly met the sedentary Little Owl. Of the Passeriformes species, Crested Lark, Lesser Short-toed Lark, White-winged Lark, Isabelline Wheatear, and Black-necked Wheatear were found in winter.

At the end of the winter season, in February and in early March, the migration of following bird species was observed: Long-legged Buzzard, Common Buzzard, Lammergeier. Precipitation in winter, as expected, was not much in this area, and a sharp warming in February activated rodents that came out of their burrows, and they in turn become the main food object of predators.

The passage of waterfowl over the territory in winter was not recorded.

Although large birds of prey were recorded at all 14 VPs in winter, but there were more birds of prey recorded on the Northern and Eastern parts of the territory than in other areas.

In February and March, the old nests of predators were still empty, but many birds were met in pairs, and once a pair of Golden Eagle was seen in mating behavior.

Appendix 1. Weather conditions during VP Summer surveys

Table 8 Weather conditions and visibility in November

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
17 November													half cloudy, cold 5-6 m/s	cloudy, cold 5-6 m/s
18 November											half cloudy, cold 6-7 m/s	half cloudy, cold 5-6 m/s		
19 November							cloudy, cold 5-7 m/s			half cloudy, cold 5-7 m/s				
20 November								cloudy, cold 5-6 m/s	half cloudy, cold 5-6 m/s					
21 November					half cloudy,	cloudy, 6-7 m/s								

					6-8 m/s									
22 November			sunny 6-8 m/s	sunny, 6-8 m/s										
23 November	half cloudy, cold 6-8 m/s	half cloudy, cold 7-9 m/s												

Table 9 Weather conditions and visibility in December

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 December													**cloudy, cold 4-5 m/s**	**half cloudy, cold 5-6 m/s**
2 December											**half cloudy, cold 5-6 m/s**	**cloudy, cold 5-7 m/s**		
3 December							**half cloudy, cold 4-5 m/s**			**cloudy, 5-7 m/s**				
4 December								**half cloudy, 5-7 m/s**	**cloudy, 5-6 m/s**					
5 December					**sunny, cold 5-6 m/s**	**sunny, cold 6-8 m/s**								
6 December			**sunny, cold 6-7 m/s**	**sunny, cold 6-8 m/s**										
7 December	**half cloudy,**	**cloudy, cold**												

	cold 6-8 m/s	6-8 m/s												
10 December													half cloudy, cold 6-8 m/s	half cloudy, cold 7-9 m/s
11 December											half cloudy, cold 5-7 m/s	half cloudy ,cold 5-6 m/s		
12 December							cloudy, cold 4-6 m/s			half cloudy, cold 5-6 m/s				
13 December								half cloudy, cold 3-4 m/s	half cloudy, cold 3-4 m/s					
14 December					cloudy, cold 3-5 m/s	half cloudy, cold 6-8 m/s								
15 December			sunny, cold	sunny, cold										

			4-6 m/s	4-6 m/s										
16 December	half cloudy, cold 6-7 m/s	half cloudy, cold 6-7 m/s												
20 December													half cloudy, cold 5-6 m/s	cloudy, cold 3-5 m/s
21 December											half cloudy, cold 2-4 m/s	half cloudy, cold 2-4 m/s		
22 December							half cloudy, cold 2-3 m/s			half cloudy, cold 6-7 m/s				
23 December								half cloudy, 6-8 m/s	cloudy 6-8 m/s					
24 December					half cloudy 5-7 m/s	half cloudy 3-5 m/s								
25 December			half cloudy	half cloudy										

			6-7 m/s	5-7 m/s										
26 December	half cloudy, cold 5-6 m/s	half cloudy, cold 5-6 m/s												

Table 10 Weather conditions and visibility in January

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
4 January	sunny 5-6 m/s	sunny 4-5 m/s												
5 January			cloudy, 3-5 m/s	cloudy, 5-7 m/s										
6 January					sunny 5-7 m/s	sunny, 5-7 m/s								
10 January							partly cloudy, 5-7 m/s	half cloudy, 4-5 m/s						
11 January									half cloudy, 5-7 m/s	partly cloudy, 5-7 m/s				
12 January											sunny 5-6 m/s	sunny 6-8 m/s		
13 January													sunny 6-8 m/s	sunny 6-8 m/s
14 January	sunny 6-8 m/s	sunny 5-6 m/s												
15 January			partly cloudy, 5-6 m/s	partly cloudy, 4-6 m/s s										
16 January					half cloudy 3-5 m/s	half cloudy 6-8 m/s								
19 January							sunny 4-6 m/s			sunny 5-6 m/s				
20 January								sunny, 6-7 m/s	sunny, 6-7 m/s					

21 January											half cloudy 5-6 m/s	cloudy 3-5 m/s		
22 January													half cloudy 6-8 m/s	half cloudy 6-7 m/s
23 January	half cloudy 6-7 m/s	half cloudy 5-6 m/s												
24 January			half cloudy 6-8 m/s	cloudy 6-8 m/s										
25 January					half cloudy 5-7 m/s	half cloudy 5-6 m/s								
26 January							half cloudy 6-7 m/s			half cloudy 5-7 m/s				
27 January								half cloudy 5-6 m/s	half cloudy 5-7 m/s					
28 January											half cloudy 5-6 m/s	half cloudy 4-6 m/s		
29 January													half cloudy 4-6 m/s	half cloudy 5-6 m/s

Table 11 Weather conditions and visibility in February

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 February	cloudy, 5-6 m/s	cloudy, 4-6m/s												
2 February			cloudy, 3-5 m/s	cloudy, 5-7 m/s										
3 February					cloudy, 5-7 m/s	cloudy, 5-6 m/s								
4 February							partly cloudy, 5-7 m/s			half cloudy, 4-5 m/s				
5 February								sunny, 5-7 m/s	sunny, 5-7 m/s					
6 February											half cloudy, 5-6 m/s	half cloudy, 6-8 m/s		
7 February													half cloudy, 6-8 m/s	half cloudy, 6-8 m/s
8 February	cloudy, 5-6 m/s	cloudy 5-6 m/s												
9 February			partly cloudy 5-6 m/s	partly cloudy 4-6 m/s s										
10 February					cloudy 3-5 m/s	half cloudy 5-6 m/s								
11 February							sunny 5-6 m/s			sunny 4-6 m/s				
12 February								half cloudy 3-5 m/s	half cloudy 5-6 m/s					

14 February											sunny 5-6 m/s	sunny 5-6 m/s		
15 February													sunny 3-5 m/s	sunny 5-6 m/s
16 February	half cloudy 3-5 m/s	half cloudy 5-6 m/s												
17 February			half cloudy 3-5 m/s	half cloudy 3-5 m/s										
18 February					half cloudy 2-3 m/s	half cloudy 2-3 m/s								
19 February							half cloudy 3-5 m/s			half cloudy 3-4 m/s				
20 February								half cloudy 3-5 m/s	half cloudy 5-7 m/s					
21 February											half cloudy 2-4 m/s	half cloudy 2-3 m/s		
22 February													half cloudy 4-6 m/s	half cloudy 4-6 m/s
24 February	half cloudy 4-6 m/s	half cloudy 4-6 m/s												
26 February			half cloudy 4-6 m/s	half cloudy 5-6 m/s										
27 February							half cloudy 5-6 m/s			half cloudy 5-6 m/s				
28 February					half cloudy	half cloudy								

					4-6 m/s	4-6 m/s								

Table 12 Weather conditions and visibility in March

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
1 March	sunny 4-6 m/s	sunny 4-5 m/s												
2 March			half cloudy, 4-5 m/s	half cloudy, 4-6 m/s										
3 March					half cloudy, 4-6 m/s	half cloudy, 5-7 m/s								
4 March							sunny 4-6 m/s			half cloudy, 4-5 m/s				
5 March								half cloudy, 5-7 m/s	half cloudy, 5-7 m/s					
6 March											half cloudy, 5-6 m/s	half cloudy, 5-7 m/s		
7 March													half cloudy, 5-6 m/s	half cloudy, 5-6 m/s
8 March								sunny, 5-6 m/s	sunny, 5-6 m/s					
9 March											sunny, 5-6 m/s	sunny, 4-6 m/s		
10 March													sunny, 3-5 m/s	sunny, 5-6 m/s

Appendix 2. Vantage Point Data Logs

VP survey results in November

VP. 13

Date: 17.11.2020. Start and end time: 9:25 –12:27
Weather:
The air temperature: start -3°C end -2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 14

Date: 17.11.2020. Start and end time: 13:41 – 15:41

Weather:

The air temperature: start -1°C end -2°C is cloudy, cold

Wind speed approx. (6-7 m/s)

No precipitation

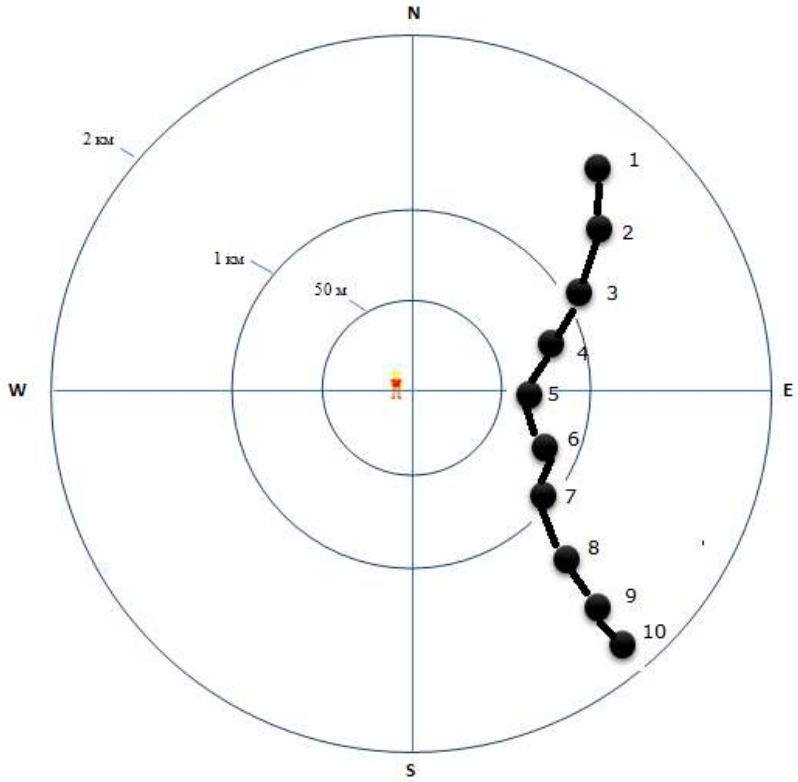


Fig. 3 Flight path (VP 14), 17.11.2020

Table 13 Target species log (VP 14), 17.11.2020

	Aquila nipalensis	**14:55**	1 120m	2 120m	3 120m	4 120m	5 125m	6 100m	7 90 m	8 95 m	9 95m	10 90 m

VP. 11

Date: 18.11.2020. Start and end time: 10:09 – 13:09
Weather:
The air temperature: start -4°C end -3°C sky half cloudy, cold
Wind speed approx. (6-7 m/s)
No precipitation
Primary species not found

VP. 12

Date: 18.11.2020. Start and end time: 13:42 – 16:42

Weather

The air temperature: start -2°C end -3°C half cloudy, cold

Wind speed approx. (5-6 m/s)

No precipitation

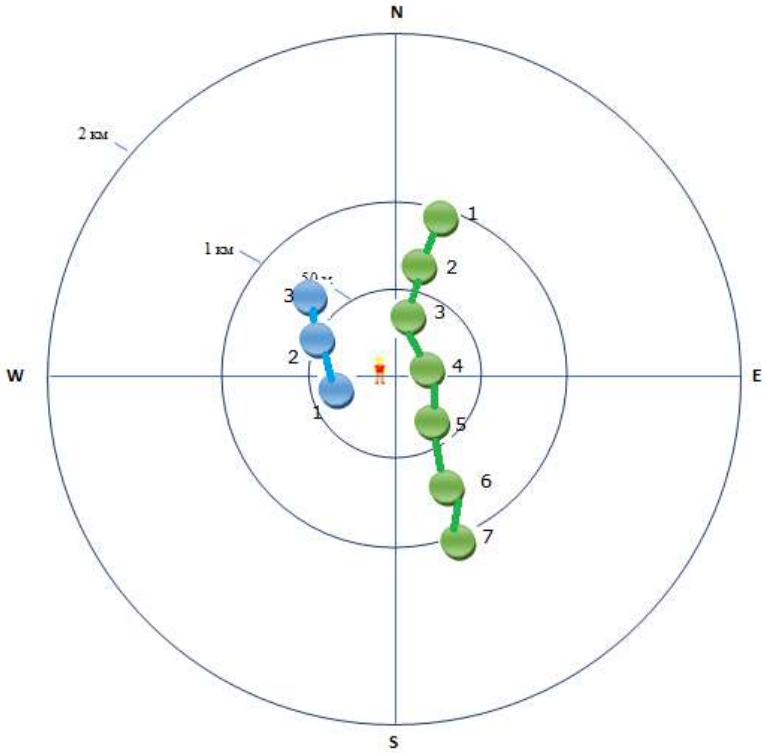


Fig. 4 Flight path (VP 12), 18.11.2020

Table 14 Target species log (VP 12), 18.11.2020

	Falco tinnunculus	**12:42**	1 5m	2 5m	3 10m	4 15m	5 15m	6 15m	7 20m
	Athene noctua	**14:11**	1 0m	2 2m	3 0m				

VP.7

Date: 19.11.2020. Start and end time: 9:12 – 12:12
Weather:
The air temperature: start -4°C end -3°C cloudy, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.10

Date: 19.11.2020. Start and end time: 13:08 – 16:09

Weather:

The air temperature: start -3°C end -4°C sky half cloudy.

Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP. 8

Date: 20.11.2020. Start and end time: 9:23 – 12:23

Weather

The air temperature: start -4°C end -2°C cloudy, cold

Wind speed approx. (5-6 m/s)

No precipitation

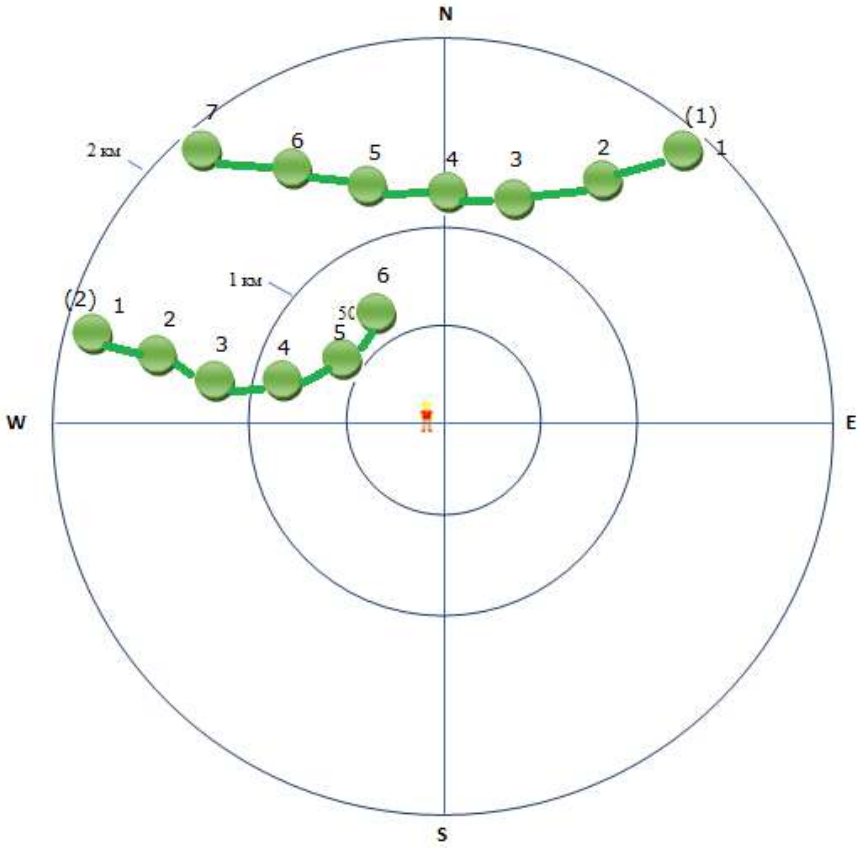


Fig. 5 Flight path (VP 8), 20.11.2020

Table 15 Target species log (VP 8), 20.11.2020

	Falco tinnunculus (1)	**11:25**	1 10m	2 15m	3 10m	4 10m	5 15m	6 15m	7 10m
	Falco tinnunculus (2)	**12:02**	1 20m	2 25m	3 20m	4 20m	5 25m	6 25m	

VP.9

Date: 20.11.2020. Start and end time: 13:09 – 16:11
Weather:
The air temperature: start -2°C end -3°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.5

Date: 21.11.2020. Start and end time: 9:32 – 12:32
Weather:
The air temperature: start 2°C end 5°C sky half cloudy.
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.6

Date: 21.11.2020. Start and end time: 12:58– 16:12

Weather:

The air temperature: start 5°C end 2°C cloudy.

Wind speed approx. (6-7 m/s) No precipitation

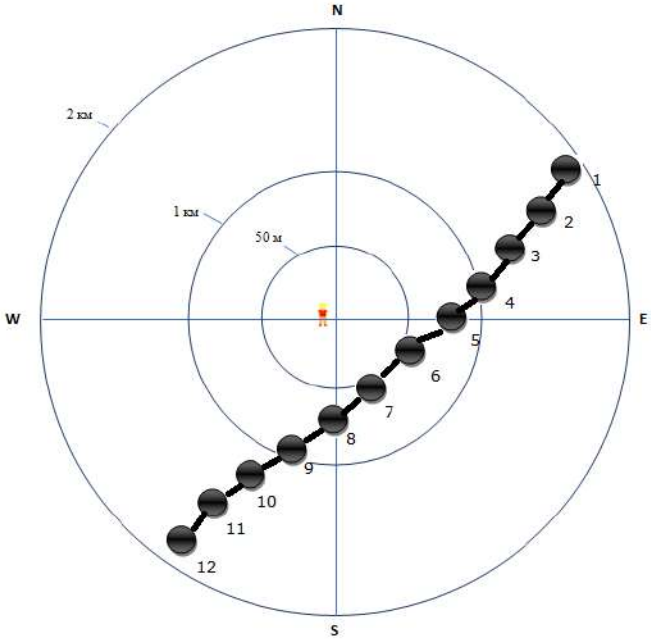


Fig. 6 Flight path (VP 6), 21.11.2020

Table 16 Target species log (VP 6), 21.11.2020

	Aquila nipalensis	**13:23**	1 85m	2 85m	3 90m	4 85m	5 85m	6 85m	7 90m	8 90 m	9 90 m	10 95m	11 95m	12 90m

VP. 3

Date: 22.11.2020. Start and end time: 9:11–12:13
Weather:
The air temperature: start 4°C end 8°C is sunny
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.4

Date: 22.11.2020 Start and end time: 12:56 – 16:06
Weather:
The air temperature: start 4°C end 8°C is sunny
Wind speed approx. (6-8 m/s) No precipitation

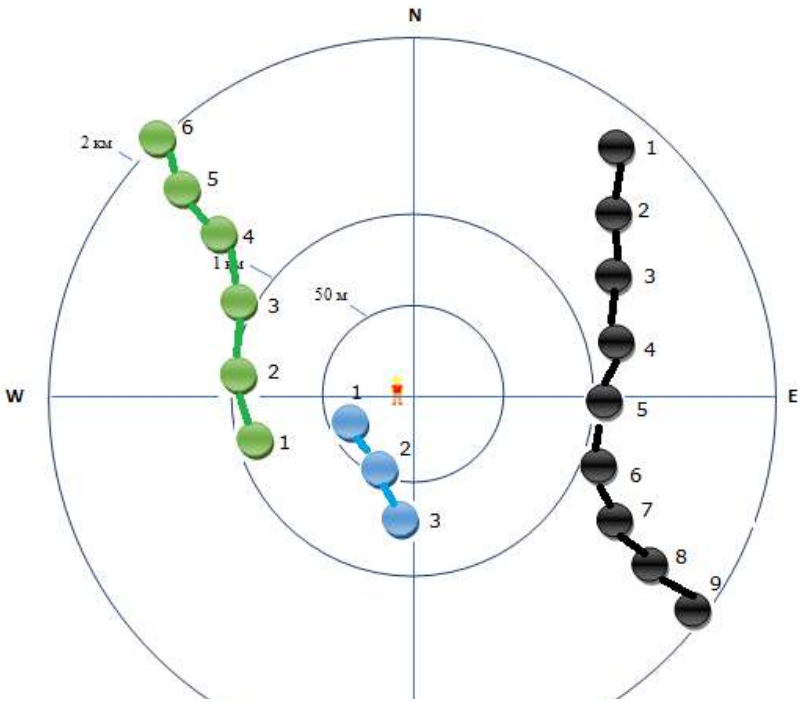


Fig. 7 Flight path (VP 4), 22.11.2020

Table 17 Target species log (VP 4), 22.11.2020

	Aquila nipalensis	**12:57**	1 90m	2 90m	3 95m	4 95m	5 95m	6 90m	7 90m	8 90m	9 95m
	Athene noctua	**13:12**	1 5m	2 5m	3 0m						
	Falco tinnunculus	**14:37**	1 10m	2 10m	3 5m	4 5m	5 15m	6 15m			

VP. 1

Date: 23.11.2020. Start and end time: 9:06 – 12:10
Weather:
The air temperature: start -2°C end 0°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 2

Date: 23.11.2020. Start and end time: 13:18 – 16:18
Weather:
The air temperature: start 0°C end -2°C sky half cloudy, cold
Wind speed approx. (7-9 m/s) No precipitation
Primary species not found

VP survey results in December

VP. 13

Date: 01.12.2020. Start and end time: 9:23 –12:27
Weather:
The air temperature: start -1°C end 2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 14

Date: 01.12.2020. Start and end time: 13:11 – 16:11

Weather:

The air temperature: start 3°C end -1°C is cloudy, cold

Wind speed approx. (4-5 m/s)

No precipitation

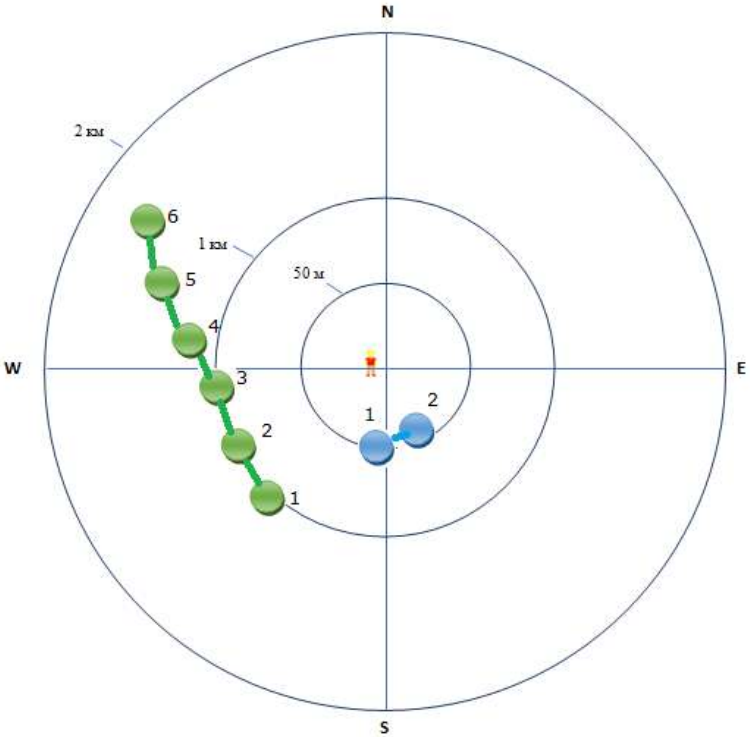


Fig. 8 Flight path (VP 14), 01.12.2020

Table 18 Target species log (VP 14), 01.12.2020

	Falco tinnunculus	**13:56**	1 10m	2 10m	3 10m	4 5m	5 5m	6 10m
	Athene noctua	**15:21**	1 5m	2 0m				

VP. 11

Date: 02.12.2020. Start and end time: 9:09 – 12:09
Weather:
The air temperature: start 1°C end 3°C sky half cloudy, cold
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP.12

Date: 02.12.2020. Start and end time: 12:53 – 15:56

Weather:

The air temperature: start 3°C end 1°C cloudy, cold

Wind speed approx. (5-7 m/s) No precipitation

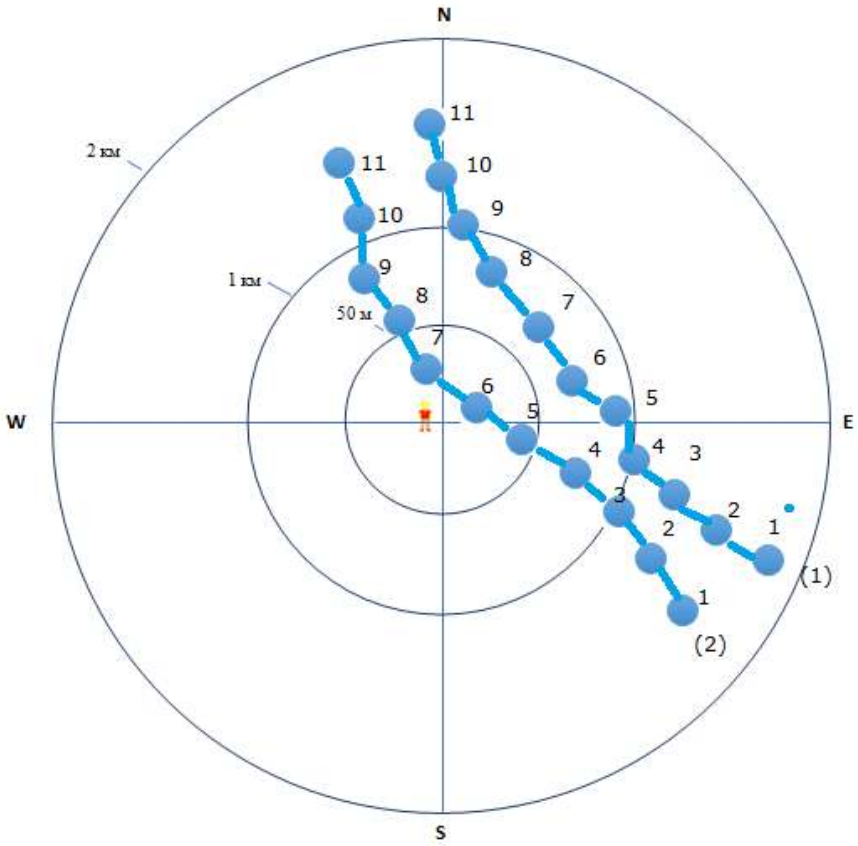


Fig. 9 Flight path (VP 12), 02.12.2020

Table 19 Target species log (VP 12), 02.12.2020

	Aegypius monachus (1)	**14:11**	1 175m	2 175m	3 170m	3 180m	4 175m	5 175m	6 175m	7 175m	8 175m	9 175m	10 175m	11 175m
	Aegypius monachus (2)	**14:12**	1 175m	2 175m	3 170m	3 180m	4 175m	5 175m	6 175m	7 175m	8 175m	9 175m	10 175m	11 175m

VP. 7

Date: 03.12.2020. Start and end time: 9:49 – 12:53

Weather

The air temperature: start 0°C end 2°C half cloudy, cold

Wind speed approx. (4-5 m/s)

No precipitation

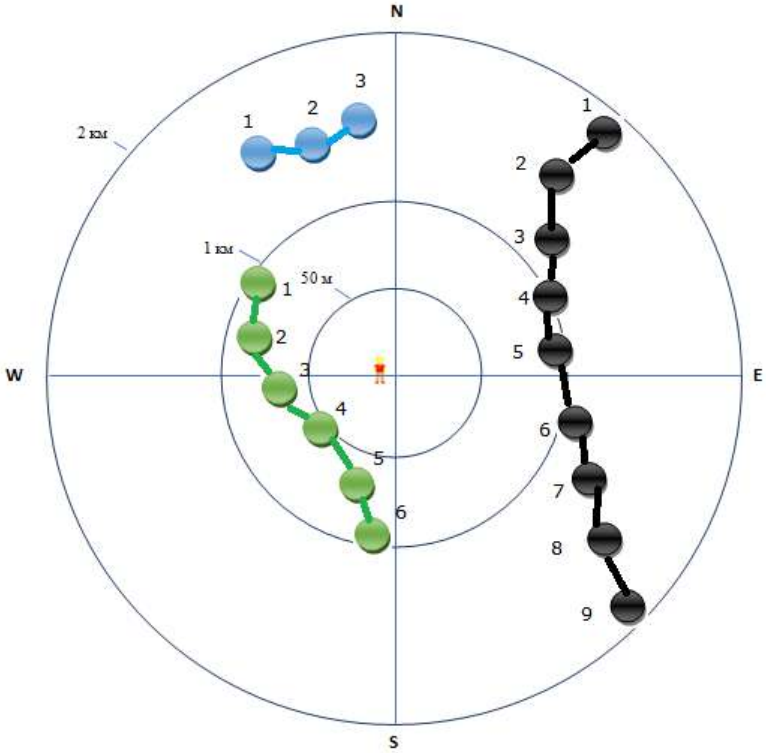


Fig. 10 Flight path (VP 07), 03.12.2020

Table 20 Target species log (VP 7), 03.12.2020

	Falco tinnunculus	**9:42**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m			
	Athene noctua	**10:11**	1 5m	2 5m	3 0m						
	Aquila nipalensis	**11:42**	1 85m	2 85m	3 80m	4 75m	5 75m	6 65m	7 65m	8 75m	9 75m

VP.10

Date: 03.12.2020. Start and end time: 13:18 – 16:18

Weather:

The air temperature: start 2°C end 1°C cloudy.

Wind speed approx. (5-7 m/s) No precipitation

Primary species not found

VP.8

Date: 04.12.2020. Start and end time: 9:28 – 12:29
Weather:
The air temperature: start 1°C end 4°C sky half cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP. 9

Date: 04.12.2020. Start and end time: 13:13 – 15:13

Weather

The air temperature: start 4°C end 1°C cloudy.
Wind speed approx. (5-6 m/s)
No precipitation

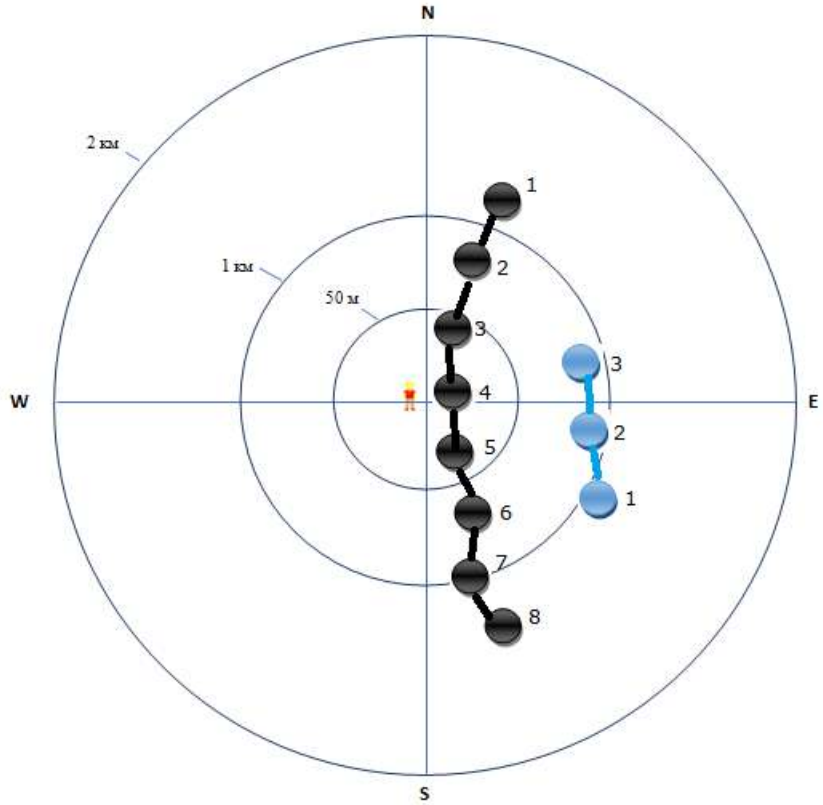


Fig. 11 Flight path (VP 9), 04.12.2020

Table 21 Target species log (VP 9), 04.12.2020

	Aquila nipalensis	**14:25**	1 20m	2 25m	3 20m	4 20m	5 25m	6 25m	7 30m	8 30m
	Athene noctua	**14:47**	1 6m	2 5m	3 0m					

VP.5

Date: 05.12.2020. Start and end time: 9:09 – 12:11
Weather:
The air temperature: start -2°C end -1°C is sunny, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.6

Date: 05.12.2020. Start and end time: 12:52 – 15:52
Weather:
The air temperature: start -1°C end -2°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.3

Date: 06.12.2020. Start and end time: 8:51– 11:51

Weather:

The air temperature: start -3°C end -1°C is sunny, cold

Wind speed approx. (6-7 m/s) No precipitation

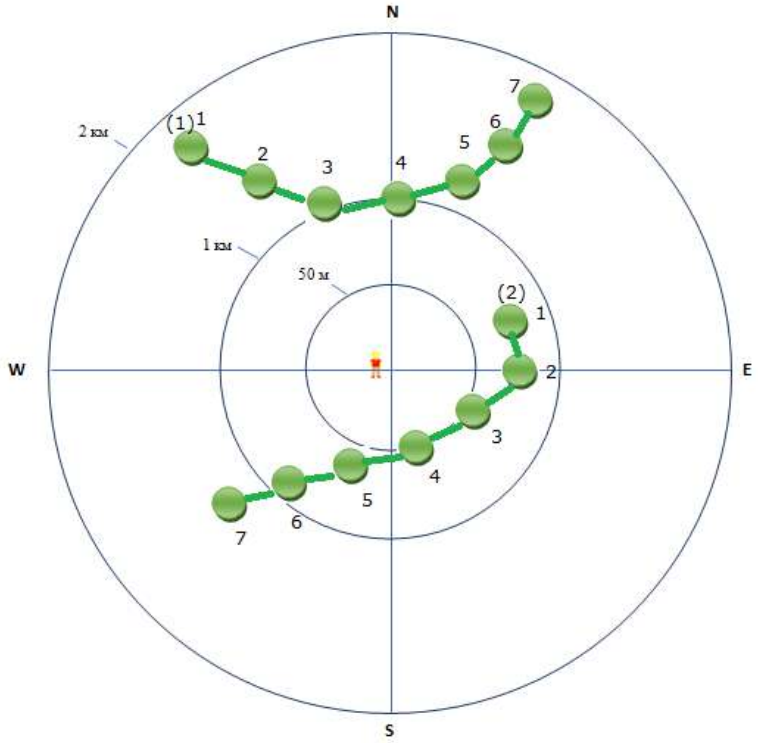


Fig. 12 Flight path (VP 3), 06.12.2020

Table 22 Target species log (VP 3), 06.12.2020

	Falco tinnunculus (1)	**10:23**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m	7 10m
	Falco tinnunculus (2)	**11:19**	1 5m	2 5m	3 10m	4 15m	5 15m	6 5m	7 10m

VP. 4

Date: 06.12.2020. Start and end time: 12:23–15:25
Weather:
The air temperature: start -1°C end -2°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 1

Date: 07.12.2020. Start and end time: 9:29 – 12:26
Weather:
The air temperature: start -4°C end -2°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.2

Date: 07.12.2020. Start and end time: 13:16 – 16:15
Weather:
The air temperature: start -2°C end -3°C cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation

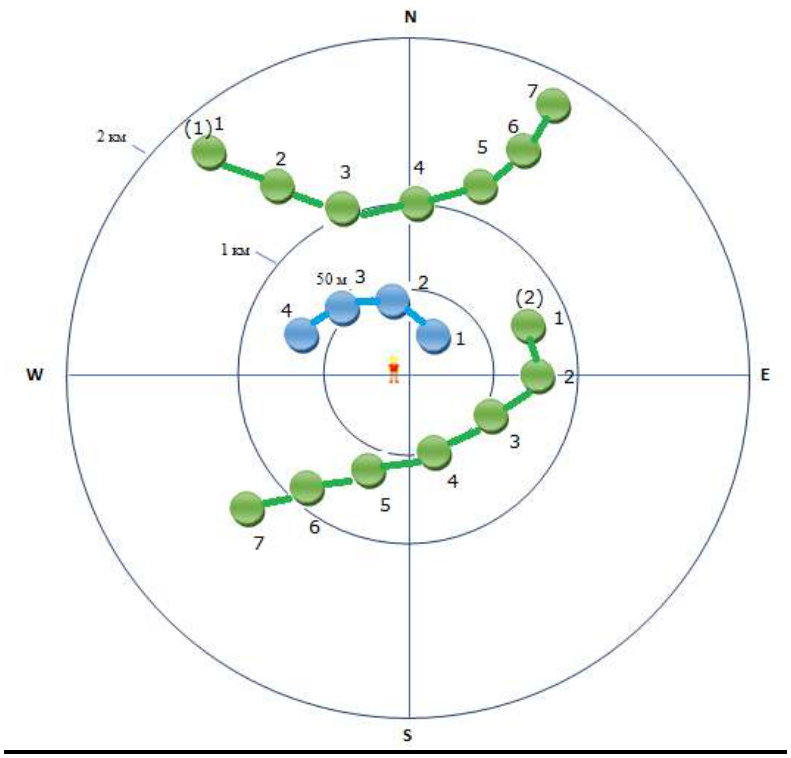


Fig. 13 Flight path (VP 2), 07.12.2020

Table 23 Target species log (VP 2), 07.12.2020

	Athene noctua	**13:57**	1 0m	2 5m	3 5m	4 10m	5 0m		
	Falco tinnunculus (1)	**14:03**	1 10m	2 5m	3 5m	4 10m	5 15m	6 15m	7 15m
	Falco tinnunculus (2)	**15:26**	1 5m	2 5m	3 5m	4 10m	5 10m	6 10m	7 10m

VP. 13

Date: 10.12.2020. Start and end time: 9:06 – 12:10
Weather:
The air temperature: start -2°C end 0°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 14

Date: 10.12.2020. Start and end time: 12:58 – 16:08
Weather:
The air temperature: start 0°C end -1°C sky half cloudy, cold
Wind speed approx. (7-9 m/s) No precipitation
Primary species not found

VP. 11

Date: 11.12.2020. Start and end time: 8:54 – 11:55

Weather:

The air temperature: start -2°C end -1°C sky half cloudy, cold

Wind speed approx. (5-7 m/s) No precipitation

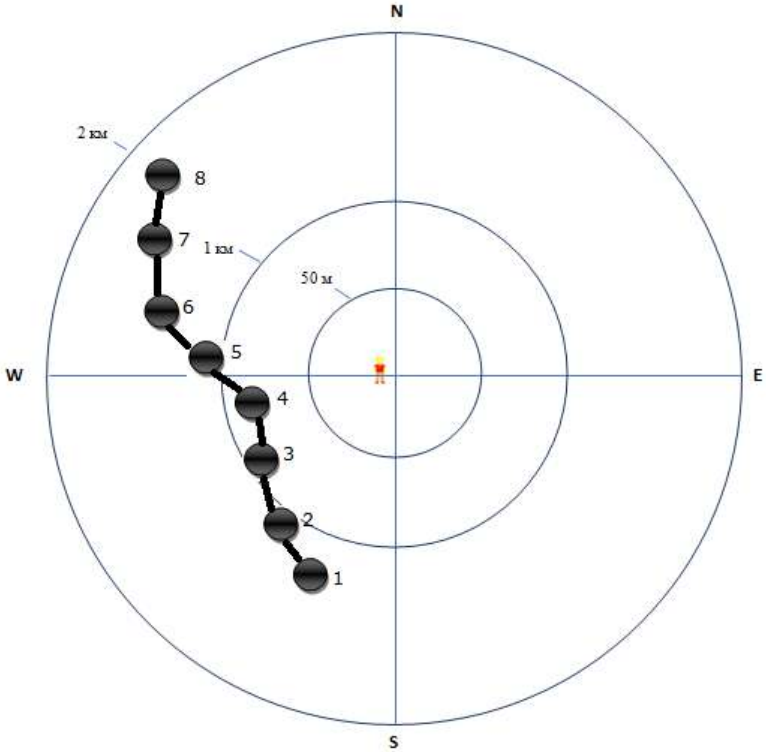


Fig. 14 Flight path (VP 11), 11.12.2020

Table 24 Target species log (VP 11), 11.12.2020

	Aquila nipalensis	**12:09**	1 0m	2 20m	3 30m	4 45m	5 55m	6 60m	7 65m	8 75m

VP.12

Date: 11.12.2020. Start and end time: 12:12– 15:16
Weather:
The air temperature: start -1°C end -2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation

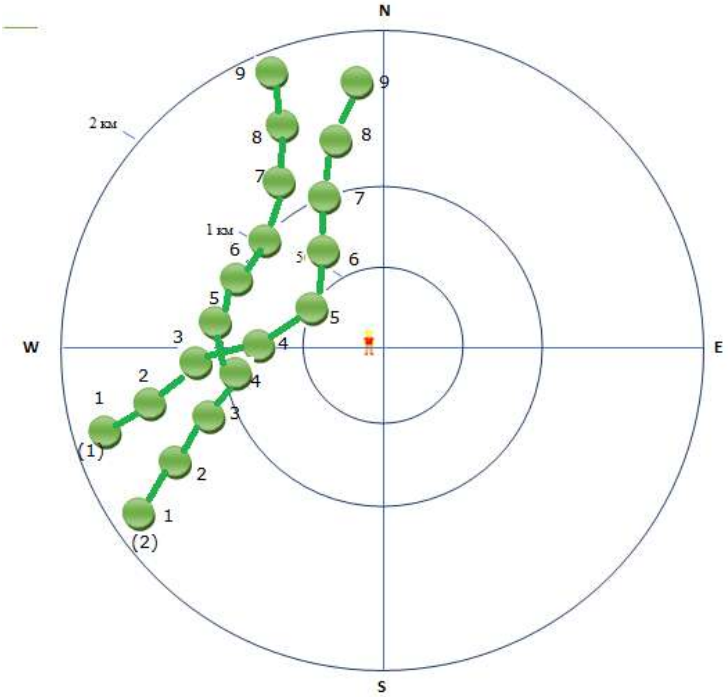


Fig. 15 Flight path (VP 12), 11.12.2020

Table 25 Target species log (VP 12), 11.12.2020

	Gyps fulvus (1)	**12:25**	1 120m	2 120m	3 120m	4 125m	5 125m	6 120m	7 125m	8 125m	9 12m
	Gyps fulvus (1)	**12:26**	1 120m	2 120m	3 130m	4 125m	5 125m	6 120m	7 125m	8 125m	9 120m

VP.10

Date:12.12.2020. Start and end time: 8:46– 11:48
Weather:
The air temperature: start -2°C end -1°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.7

Date:12.12.2020. Start and end time: 12:58 – 15:59
Weather:
The air temperature: start -2°C end -3°C is cloudy, cold
Wind speed approx. (4-6 m/s) No precipitation

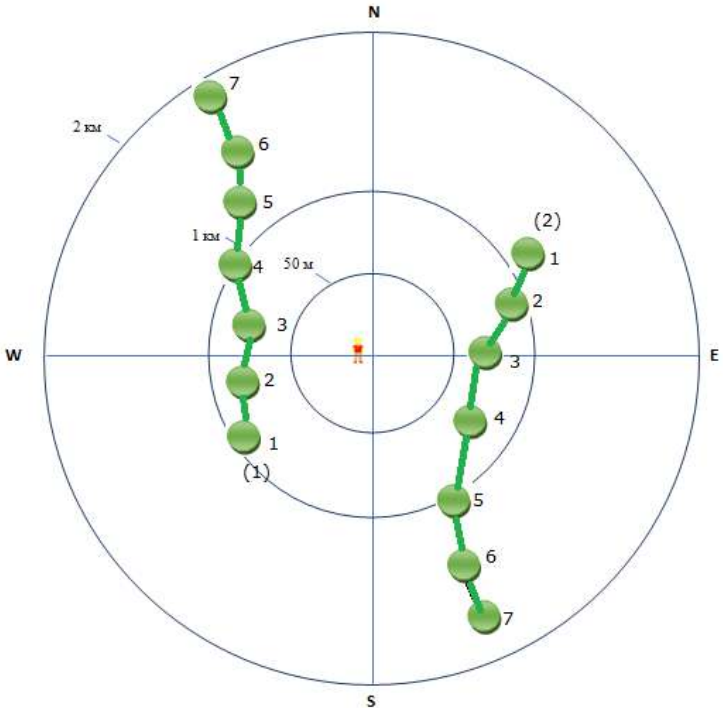


Fig. 16 Flight path (VP 7), 12.12.2020

Table 26 Target species log (VP 7), 12.12.2020

	Falco tinnunculus (1)	**13:28**	1 0m	2 5m	3 10m	4 15m	5 15m	6 10m	7 15m
	Falco tinnunculus (1)	**14:38**	1 5m	2 10m	3 10m	4 5m	5 5m	6 10m	7 15m

VP. 8

Date:13.12.2020. Start and end time: 9:13– 12:14
Weather:
The air temperature: start -4°C end -1°C sky half cloudy, cold
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP. 9

Date:13.12.2020. Start and end time: 13:16 – 16:18
Weather:
The air temperature: start -1°C end -3°C sky half cloudy, cold
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP 6

Date: 14.12.2020. Start and end time: 8:56 – 12:00
Weather:
The air temperature: start -2°C end 0°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation

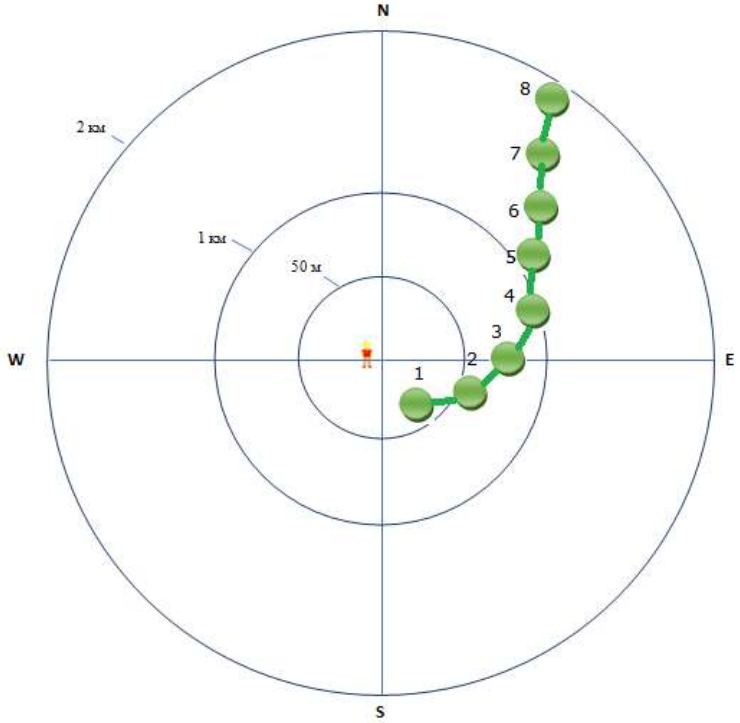


Fig. 17 Flight path (VP 6), 14.12.2020

Table 27 Target species log (VP 6), 14.12.2020

	Falco tinnunculus	**10:28**	1 0m	2 5m	3 10m	4 15m	5 15m	6 10m	7 10m	8 15m

VP.5

Date: 14.12.2020. Start and end time: 12:42 – 15:42
Weather:
The air temperature: start 0°C end -2°C cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.3

Date: 15.12.2020. Start and end time: 9:22 – 12:22
Weather:
The air temperature: start -3°C end -2°C is sunny, cold
Wind speed approx. (4-6 m/s) No precipitation

Primary species not found

VP. 4

Date: 15.12.2020. Start and end time: 12:53 – 15:59

Weather:

The air temperature: start -2°C end -3°C is sunny,cold

Wind speed approx. (4-5 m/s) No precipitation

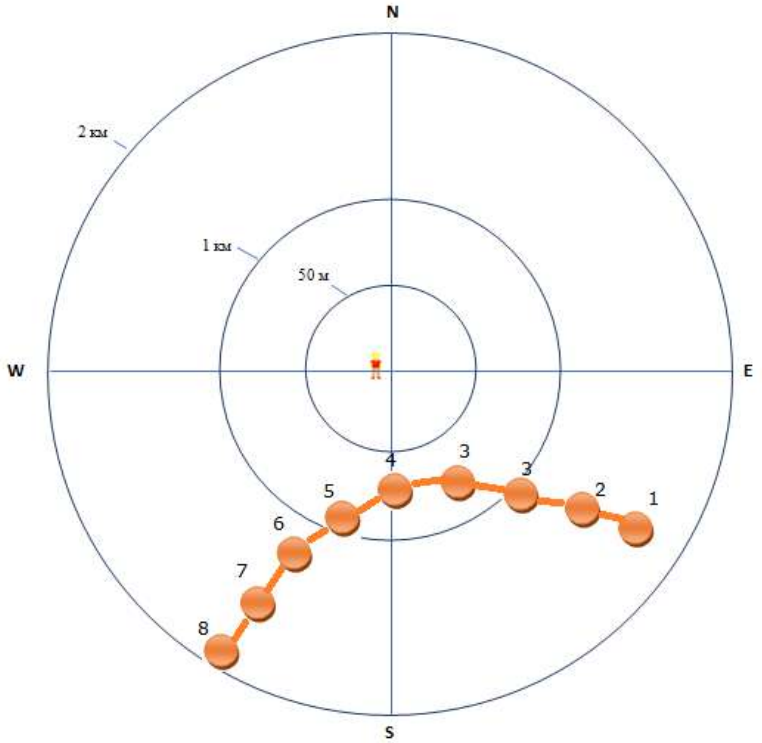


Fig. 18 Flight path (VP 4), 15.12.2020

Table 28 Target species log (VP 4), 15.12.2020

	Gypaetus barbatus	**13:52**	1 150m	2 155m	3 150m	4 155m	5 155m	6 150m	7 150m	8 155m

VP. 1

Date: 16.12.2020. Start and end time: 8:58 – 11:58

Weather:

The air temperature: start -2°C end -1°C sky half cloudy, cold

Wind speed approx. (6-7 m/s) No precipitation

Primary species not found

VP. 2

Date: 16.12.2020. Start and end time:12:38 – 15:48

Weather:

The air temperature: start -1°C end -2°C sky half cloudy, cold

Wind speed approx. (6-7 m/s) No precipitation

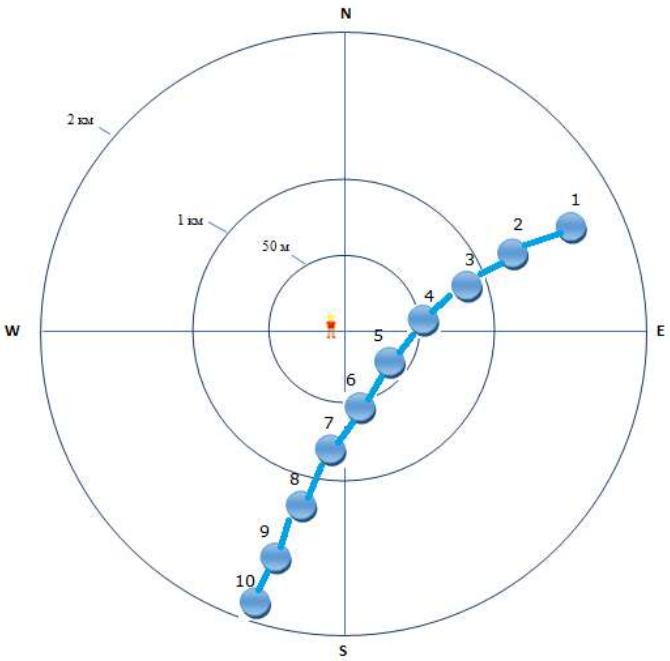


Fig. 19 Flight path (VP 2), 16.12.2020

Table 29 Target species log (VP 2), 16.12.2020

	Aegypius monachus	**14:28**	1 150m	2 155m	3 150m	4 155m	5 155m	6 150m	7 150m	8 155m	9 150m	10 155m

VP. 13

Date: 20.12.2020. Start and end time: 9:34 – 12:34
Weather:
The air temperature: start -1°C end -0°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 14

Date: 20.12.2020. Start and end time: 13:15 – 16:15

Weather:

The air temperature: start 0°C end -2 °C cloudy, cold

Wind speed approx. (3-5 m/s) No precipitation

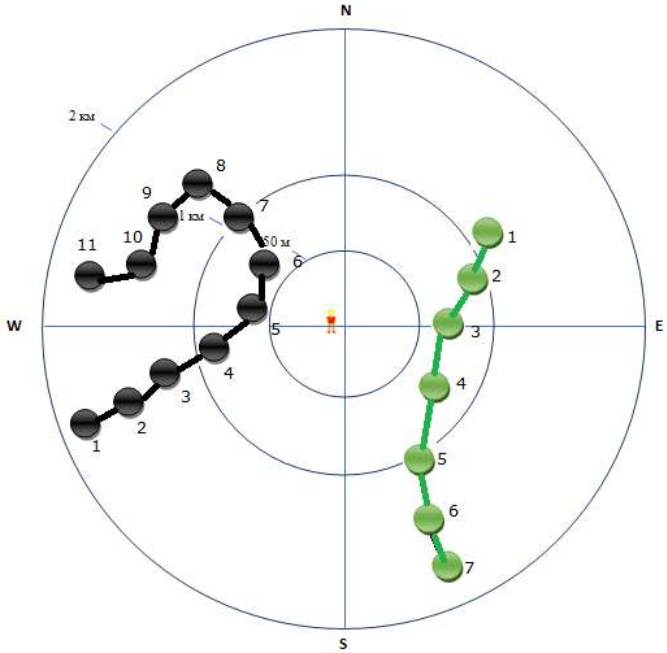


Fig. 20 Flight path (VP 14), 20.12.2020

Table 30 Target species log (VP 14), 20.12.2020

	Falco tinnunculus	**14:21**	1 10m	2 15m	3 10m	4 15m	5 15m	6 10m	7 15m				
	Aquila nipalensis	**15:36**	1 60m	2 75m	3 70m	4 75m	5 85m	6 80m	7 85m	8 95m	9 90m	10 95m	11 95m

VP. 11

Date: 21.12.2020. Start and end time: 8:47 – 11:47
Weather:
The air temperature: start -2 °C end -1 °C sky half cloudy, cold
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP. 12

Date: 21.12.2020. Start and end time: 12:22 – 15:27
Weather:
The air temperature: start -1°C end -2 °C sky half cloudy, cold
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP.10

Date: 22.12.2020. Start and end time: 8:52– 11:54

Weather:

The air temperature: start -2°C end -1°C sky half cloudy, cold

Wind speed approx. (6-7 m/s) No precipitation

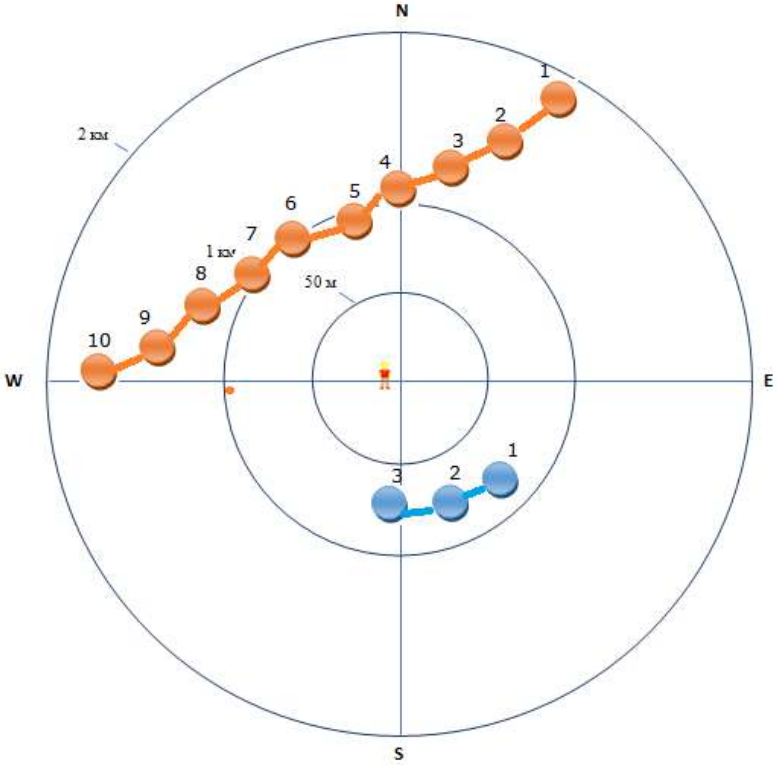


Fig. 21 Flight path (VP 10), 22.12.2020

Table 31 Target species log (VP 10), 22.12.2020

	Athene noctua	**10:23**	1 5m	2 5m	3 0m							
	Haliaeetus albicilla	**11:19**	1 125m	2 125m	3 120m	4 125m	5 125m	6 125m	7 120m	8 125m	9 125m	10 120m

VP.7

Date: 22.12.2020. Start and end time: 12:23–15:23
Weather:
The air temperature: start -2°C end -1°C sky half cloudy, cold
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 8

Date: 23.12.2020. Start and end time: 9:12 – 12:15
Weather:
The air temperature: start 1°C end 2°C sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.9

Date: 23.12.2020. Start and end time: 13:16 – 16:16
Weather:
The air temperature: start 3°C end 1°C cloudy,
Wind speed approx. (6-8 m/s) No precipitation

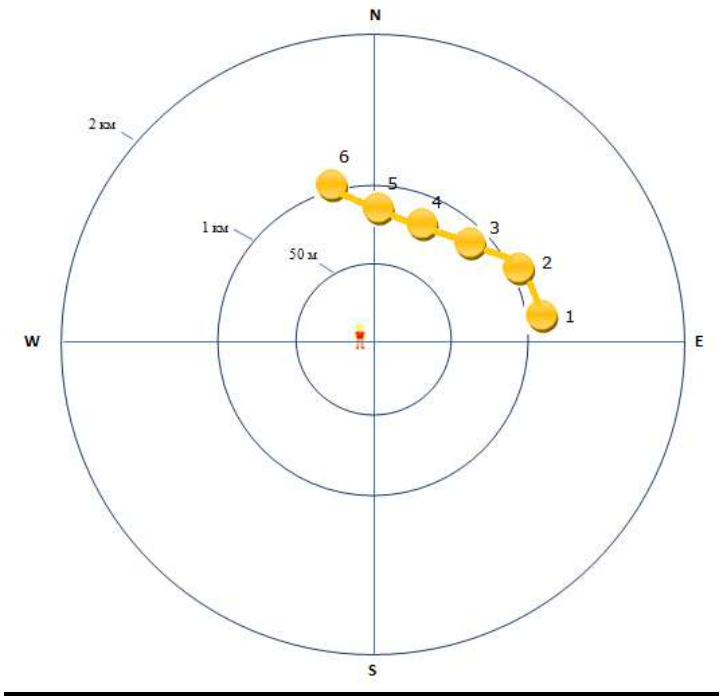


Fig. 22 Flight path (VP 9), 23.12.2020

Table 32 Target species log (VP 9), 23.12.2020

	Falco cherrug	**15:57**	1 0m	2 15m	3 15m	4 20m	5 20m	6 25m

VP. 5

Date: 24.12.2020. Start and end time: 8:54 – 11:55
Weather:
The air temperature: start 1°C end 3°C sky half cloudy
Wind speed approx. (5-7 m/s) No precipitation

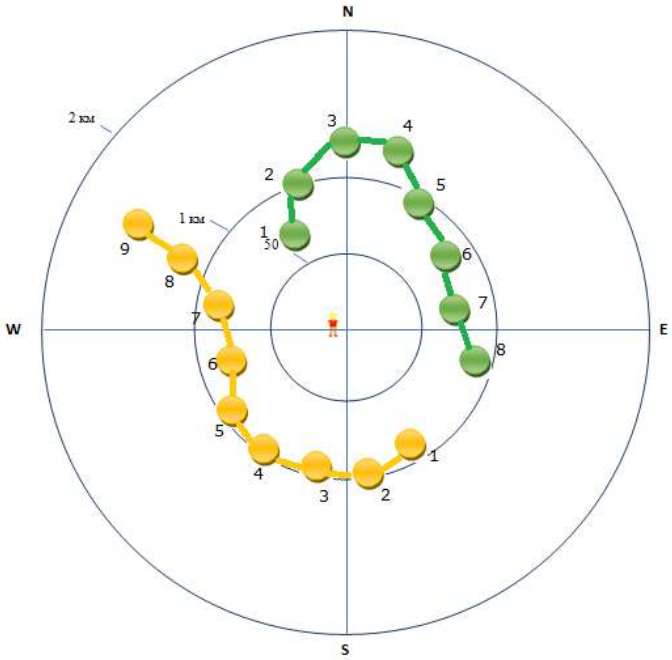


Fig. 23 Flight path (VP 5), 24.12.2020

Table 33 Target species log (VP 5), 24.12.2020

	Circus cyaneus	**10:09**	1 20m	2 20m	3 20m	4 15m	5 15m	6 10m	7 15m	8 15m	9 15m

	Falco tinnunculus	**10:49**	1 5m	2 10m	3 10m	4 15m	5 15m	6 10m	7 15m	8 15m	

VP. 6

Date: 24.12.2020. Start and end time: 12:56 – 16:10
Weather:
The air temperature: start 3°C end 1°C sky half cloudy,
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 3

Date: 25.12.2020. Start and end time: 8:58 – 11:58
Weather:
The air temperature: start 1°C end 2°C sky half cloudy
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 4

Date: 25.12.2020. Start and end time: 12:54 – 16:15
Weather:
The air temperature: start 2°C end 1°C sky half cloudy
Wind speed approx. (5-7 m/s) No precipitation

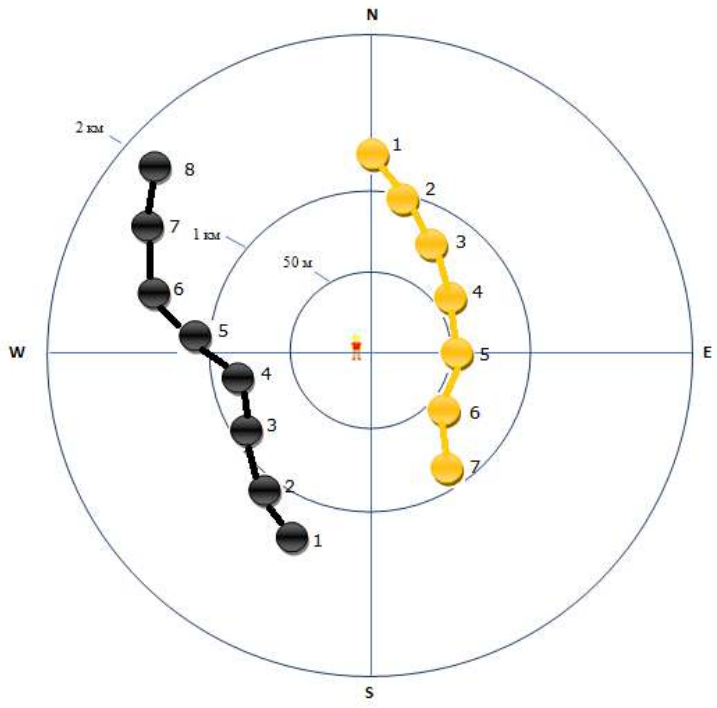


Fig. 24 Flight path (VP 4), 25.12.2020

Table 34 Target species log (VP 4), 25.12.2020

	Circus cyaneus	**14:13**	1 30m	2 20m	3 30m	4 15m	5 15m	6 10m	7 15m	
	Aquila nipalensis	**15:28**	1 20m	2 30m	3 40m	4 55m	5 55m	6 60m	7 65m	8 75m

VP.1

Date: 26.12.2020. Start and end time: 9:12– 12:16
Weather:
The air temperature: start -1°C end -2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.2

Date: 26.12.2020. Start and end time: 13:07– 16:08
Weather:
The air temperature: start -2°C end -1°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation

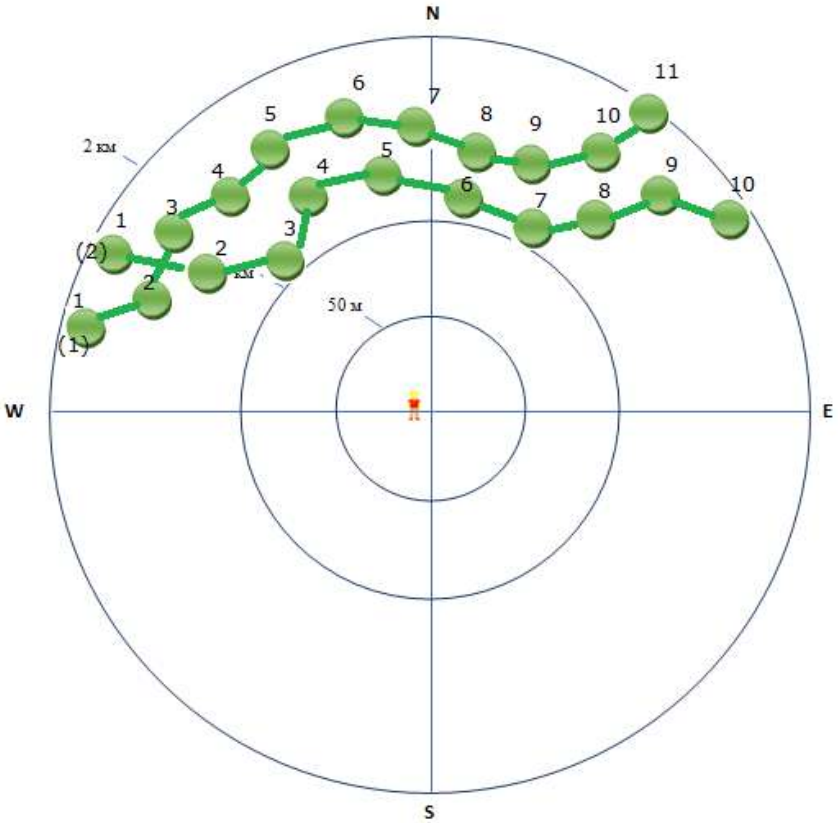


Fig. 25 Flight path (VP 2), 26.12.2020

Table 35 Target species log (VP 2), 26.12.2020

	Gyps fulvus (1)	**15:13**	1 130m	2 120m	3 130m	4 125m	5 125m	6 120m	7 125m	8 125m	9 125m	10 120m	11 125m
	Gyps fulvus (2)	**14:14**	1 130m	2 130m	3 120m	4 125m	5 125m	6 120m	7 125m	8 125m	9 125m	10 120m	

VP survey results in January

VP. 1

Date: 04.01.2021. Start and end time: 9:23 –12:27
Weather:
The air temperature: start -2°C end -1°C is sunny, cold
Wind speed approx. (5-6 m/s)
No precipitation
Primary species not found

VP. 2

Date: 04.01.2021. Start and end time: 13:11 – 16:11

Weather:

The air temperature: start 1°C end -2°C is sunny, cold

Wind speed approx. (4-5 m/s)

No precipitation

Fig. 26 Flight path (VP 2), 04.01.2021

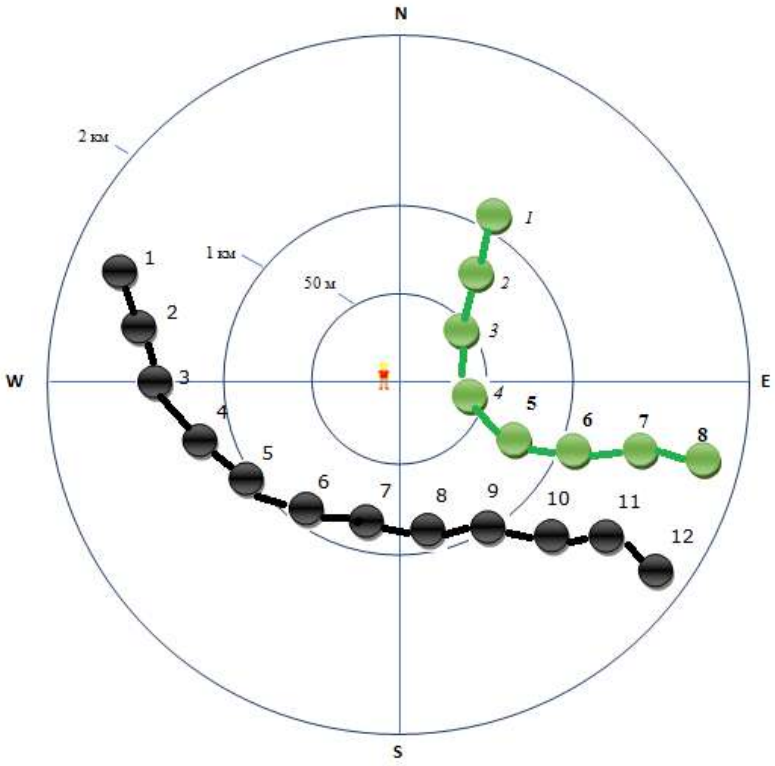


Table 36 Target species log (VP 2), 04.01.2021

	Falco tinnunculus	**13:56**	1 30m	2 30m	3 30m	4 35m	5 35m	6 40m	7 40m	8				
	Aquila chrysaetos	**15:21**	1 130m	2 130m	3 130m	4 125m	5 125m	6 120m	7 120m	8 120m	9 120m	10 115m	11 125m	12 130m

VP. 3

Date: 05.01.2021. Start and end time: 9:09 – 12:09
Weather:
The air temperature: start -2°C end 0°C cloudy, cold
Wind speed approx. (3-5 m/s)
No precipitation
Primary species not found

VP.4

Date: 05.01.2021. Start and end time: 12:58 – 16:06

Weather:

The air temperature: start 3°C end 1°C cloudy

Wind speed approx. (5-7 m/s) No precipitation

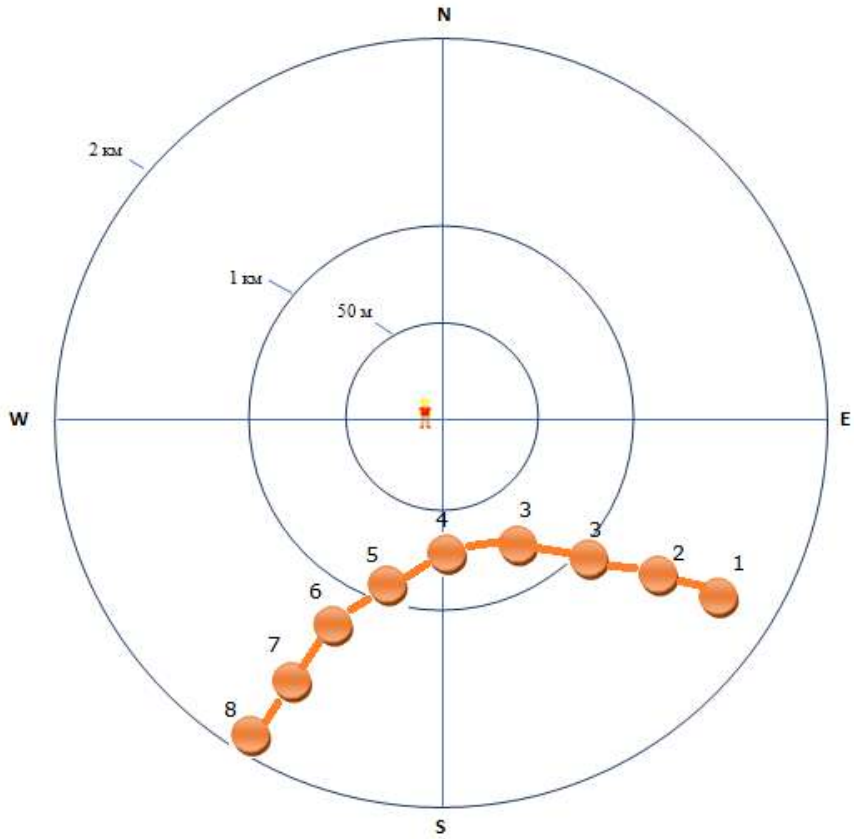


Fig. 27 Flight path (VP 4), 05.01.2021

Table 37 Target species log (VP 4), 05.01.2021

	Buteo rufinus	**14:11**	1 75m	2 75m	3 120m	3 120m	4 125m	5 125m	6 125m	7 125m	8 125m

VP.5

Date: 06.01.2021. Start and end time: 9:18 – 12:18
Weather:
The air temperature: start-2°C end -1°C is sunny, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.6

Date: 06.01.2021. Start and end time: 13:28 – 16:29
Weather:
The air temperature: start -1°C end -2°C is sunny, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.7

Date: 10.01.2021. Start and end time: 9:28 – 12:29
Weather:
The air temperature: start 2°C end 4°C partly cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP. 8

Date: 10.01.2021. Start and end time: 13:49 – 16:53

Weather

The air temperature: start 1°C end 2°C half cloudy, cold

Wind speed approx. (4-5 m/s)

No precipitation

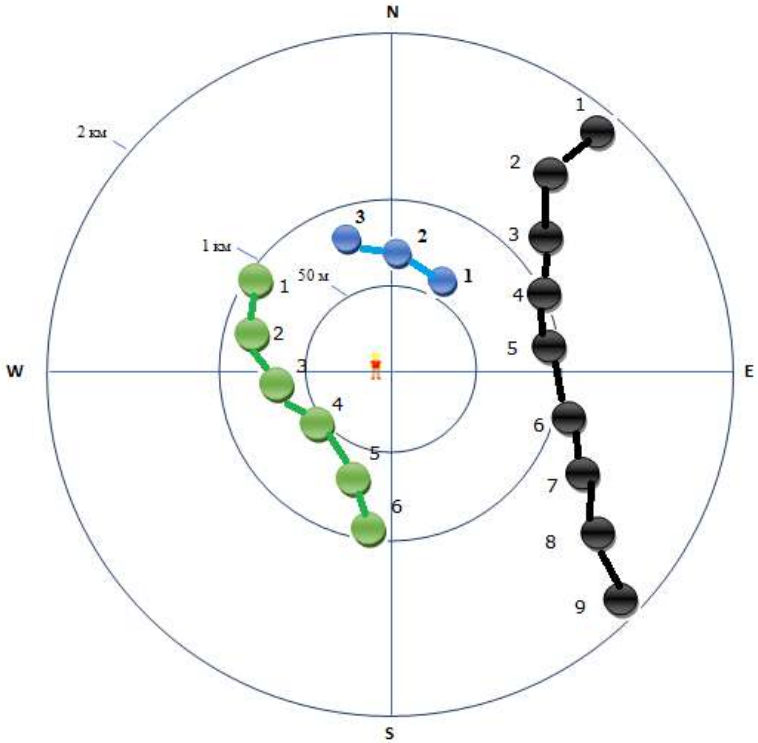


Fig. 28 Flight path (VP 8), 10.01.2021

Table 38 Target species log (VP 8), 10.01.2021

	Falco tinnunculus	**13:42**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m			
	Athene noctua	**14:11**	1 5m	2 5m	3 0m						
	Aquila nipalensis	**15:42**	1 125 m	2 125 m	3 120 m	4 125 m	5 125 m	6 95m	7 95m	8 95m	9 125 m

VP.10

Date: 11.01.2021. Start and end time: 9:28 – 12:28
Weather:
The air temperature: start 3°C end 9°C partly cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.9

Date: 11.01.2021. Start and end time: 13:23 – 16:29

Weather:

The air temperature: start 9°C end 3°C sky half cloudy.

Wind speed approx. (5-7 m/s) No precipitation

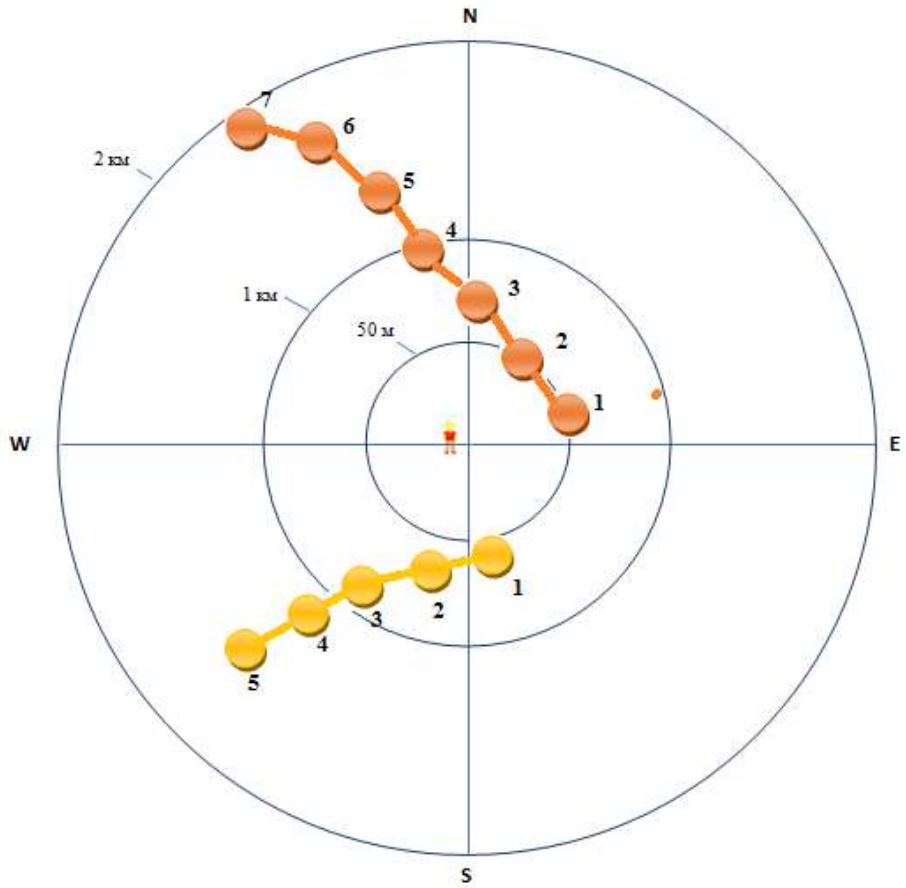


Fig. 29 Flight path (VP 9), 11.01.2021

Table 39 Target species log (VP 9), 11.01.2021

	Falco cherrug (Sat)	**14:47**	1 0m	2 0m	3 0m	4 3m	5 55m		
	Chlamydotis macqueenii	**13:25**	1 3m	2 4m	3 4m	4 5m	5 5m	6 5m	7 3m

VP.11

Date: 12.01.2021. Start and end time: 9:09 – 12:11
Weather:
The air temperature: start -2°C end -1°C is sunny, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date: 12.01.2021. Start and end time: 12:52 – 15:52
Weather:
The air temperature: start -1°C end -2°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation

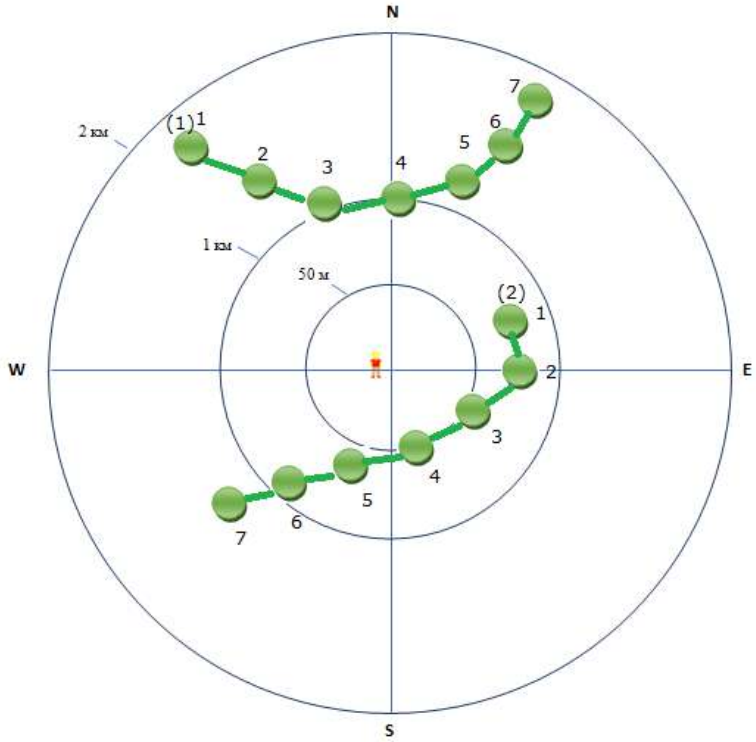


Fig. 30 Flight path (VP 12), 12.01.2021

Table 40 Target species log (VP 12), 12.01.2021

	Falco tinnunculus (1)	**12:32**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m	7 10m
	Falco tinnunculus (2)	**11:19**	1 5m	2 5m	3 10m	4 15m	5 15m	6 5m	7 10m

VP. 13

Date: 13.01.2021. Start and end time: 9:23–12:25
Weather:
The air temperature: start -3°C end -1°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.14

Date: 13.01.2021. Start and end time: 13:16 – 16:15
Weather:
The air temperature: start -1°C end -3°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation

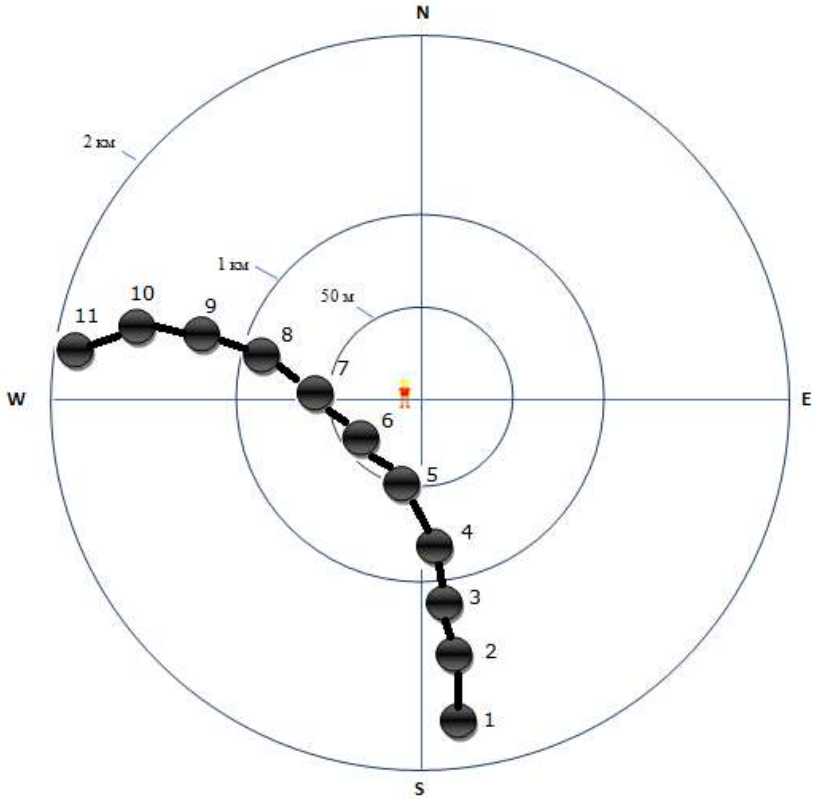


Fig. 31 Flight path (VP 14), 13.01.2021

Table 41 Target species log (VP 2), 13.01.2021

	Aquila chrysaetos	**13:52**	1 120m	2 125m	3 125m	4 100m	5 100m	6 115m	7 115m	8 110m	9 110m	10 110m	11 110m

VP. 1

Date: 14.01.2021. Start and end time: 9:06 – 12:10
Weather:
The air temperature: start -3°C end -2°C is sunny, cold
Wind speed approx. (6-8 m/s) No precipitation

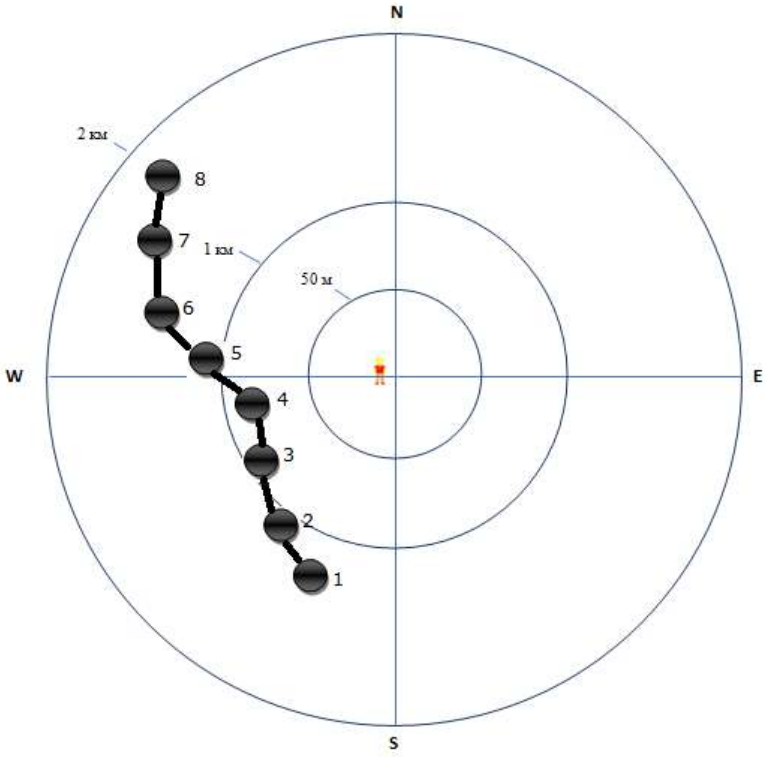


Fig. 32 Flight path (VP 1), 14.01.2021

Table 42 Target species log (VP 1), 14.01.2021

	Haliaeetus albicilla	**12:09**	1 110m	2 120m	3 130m	4 145m	5 155m	6 160m	7 165m	8 170m

VP.2

Date:14.01.2021. Start and end time: 12:15– 15:16
Weather:
The air temperature: start -1°C end -2°C is sunny, cold
Wind speed approx. (5-6 m/s) No precipitation

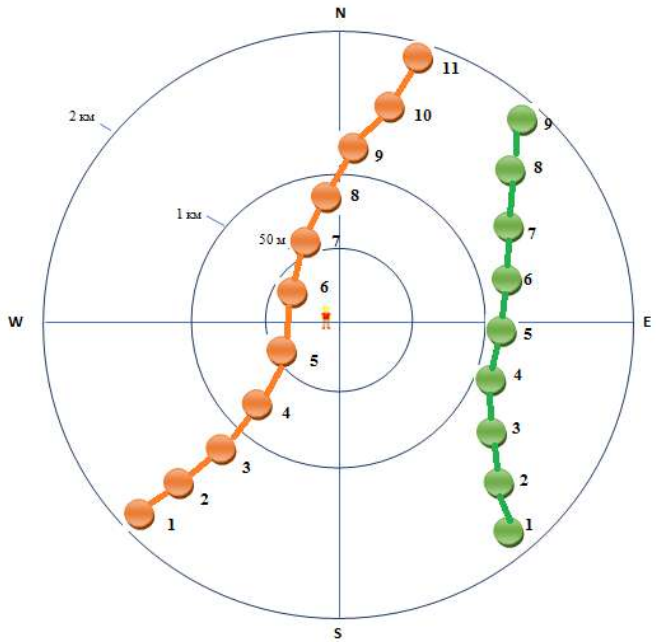


Fig. 33 Flight path (VP 2), 14.01.2021

Table 43 Target species log (VP 2), 14.01.2021

	Buteo rufinus	**12:42**	1 90m	2 90m	3 90m	4 85m	5 85m	6 80m	7 45m	8 45m	9 90m	10 90m	11 90m
	Falco tinnunculus	**14:26**	1 20m	2 20m	3 30m	4 25m	5 25m	6 20m	7 25m	8 25m	9 20m		

VP.3

Date:15.01.2021. Start and end time: 8:46– 11:48
Weather:
The air temperature: start 2°C end 5°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.4

Date:15.01.2021. Start and end time: 12:58 – 15:59
Weather:
The air temperature: start 5°C end 3°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation

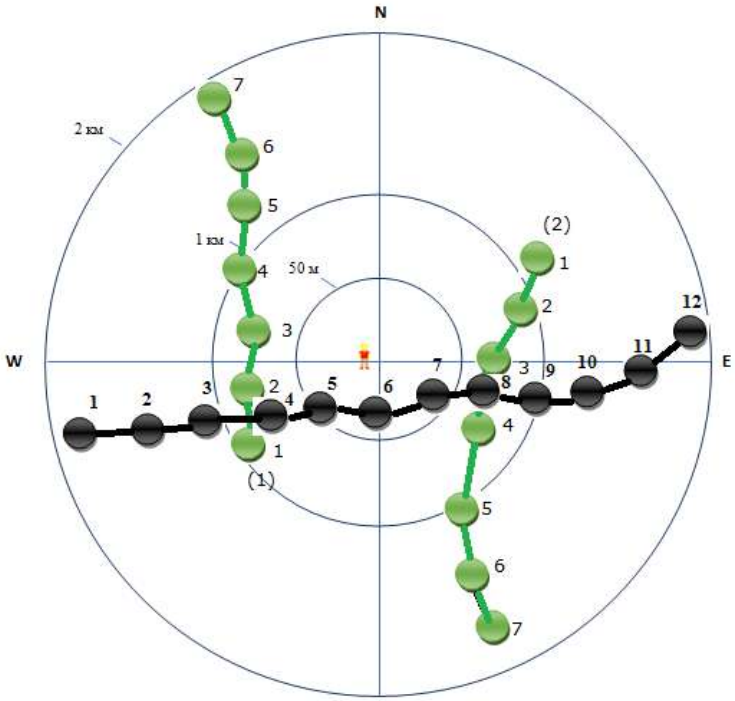


Fig. 34 Flight path (VP 4), 15.01.2021

Table 44 Target species log (VP 4), 15.04.2021

	Falco tinnunculus (1)	**13:28**	1 4m	2 5m	3 10m	4 15m	5 15m	6 10m	7 15m					
	Falco tinnunculus (2)	**14:38**	1 5m	2 10m	3 10m	4 5m	5 5m	6 10m	7 15m					
	Aquila chrysaetos	**14:52**	1 130m	2 135m	3 120m	4 125m	5 125m	6 120m	7 125m	8 120m	9 125m	10 120m	11 125m	12 125m

VP. 5

Date:16.01.2021. Start and end time: 9:13– 12:14
Weather:
The air temperature: start 3°C end 9°C sky half cloudy
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP 6

Date: 16.01.2021. Start and end time: 13:56 – 16:03
Weather:
The air temperature: start 2°C end 8°C sky half cloudy
Wind speed approx. (6-8 m/s) No precipitation

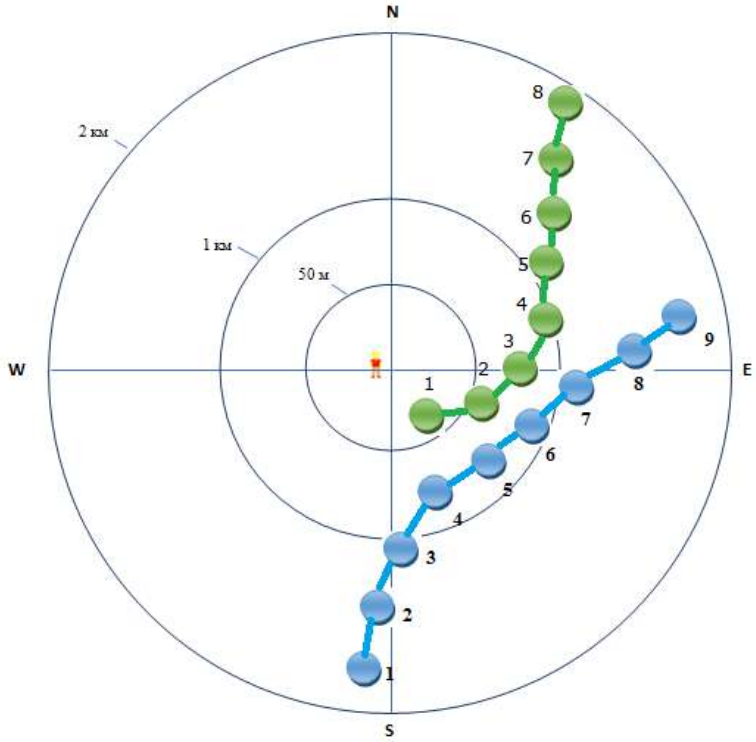


Fig. 35 Flight path (VP 6), 16.01.2021

Table 45 Target species log (VP 6), 16.01.2021

	Falco tinnunculus	**14:28**	1 12m	2 9m	3 10m	4 15m	5 15m	6 10m	7 10m	8 15m	
	Aegypius monachus	**14:49**	1 220m	2 225m	3 220m	4 225m	5 225m	6 220m	7 220m	8 225m	9 220m

VP.10

Date: 19.01.2021. Start and end time: 9:42 – 12:42
Weather:
The air temperature: start-3°C end -2°C is sunny, cold
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.7

Date:19.01.2021. Start and end time: 13:26 – 16:29
Weather:
The air temperature: start -1°C end -2°C is sunny,cold
Wind speed approx. (4-6 m/s) No precipitation

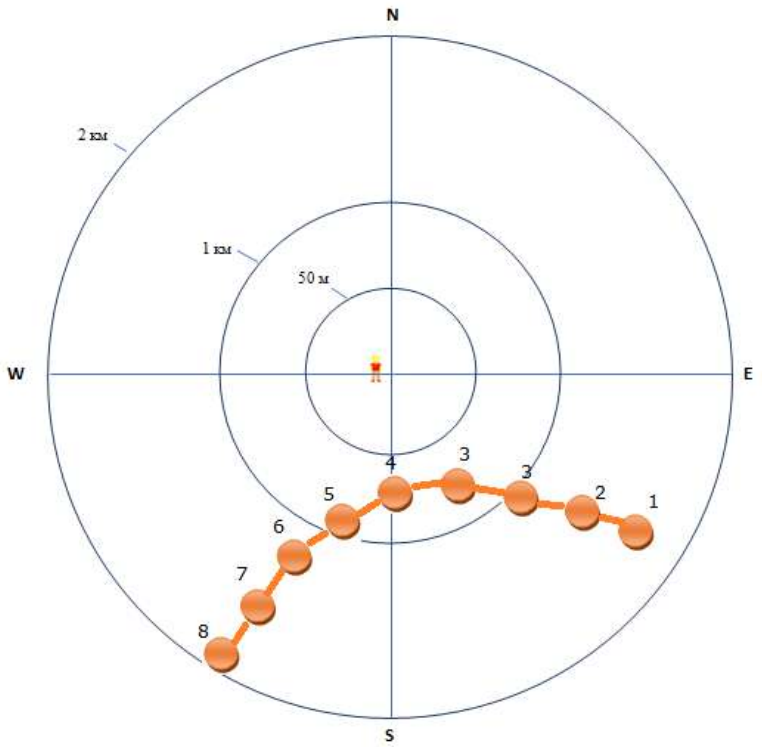


Fig. 36 Flight path (VP 7), 19.01.2021

Table 46 Target species log (VP 7), 19.01.2021

	Gyps fulvus	**13:52**	1 150m	2 155m	3 150m	4 155m	5 155m	6 150m	7 150m	8 155m

VP. 8

Date: 20.01.2021. Start and end time: 8:58 – 11:58
Weather:
The air temperature: start -3°C end -1°C is sunny, cold
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 9

Date: 20.01.2021. Start and end time:12:39 – 15:43

Weather:

The air temperature: start -1°C end -2°C is sunny, cold

Wind speed approx. (6-7 m/s) No precipitation

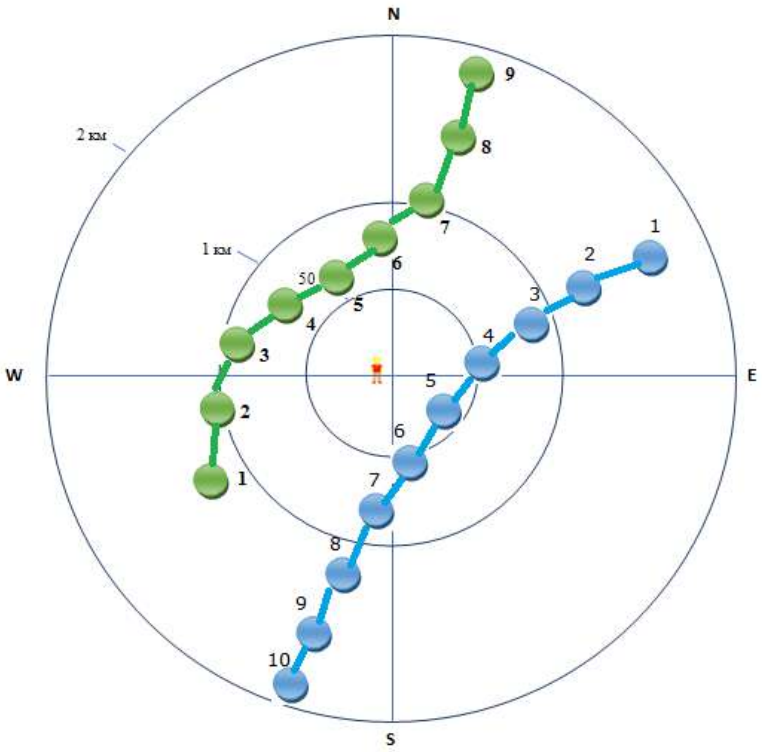


Fig. 37 Flight path (VP 9), 20.01.2021

Table 47 Target species log (VP 9), 20.01.2021

	Aegypius monachus	**14:28**	1 150m	2 155m	3 150m	4 155m	5 155m	6 150m	7 150m	8 155m	9 150m	10 155m
	Falco tinnunculus	**15:12**	1 50m	2 55m	3 40m	4 35m	5 35m	6 30m	7 30m	8 25m	9 25m	

VP. 11

Date: 21.01.2021. Start and end time: 9:34 – 12:34
Weather:
The air temperature: start -1°C end 2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 12

Date: 21.01.2021. Start and end time: 13:15 – 16:15

Weather:

The air temperature: start 3°C end 2 °C cloudy, cold

Wind speed approx. (3-5 m/s) No precipitation

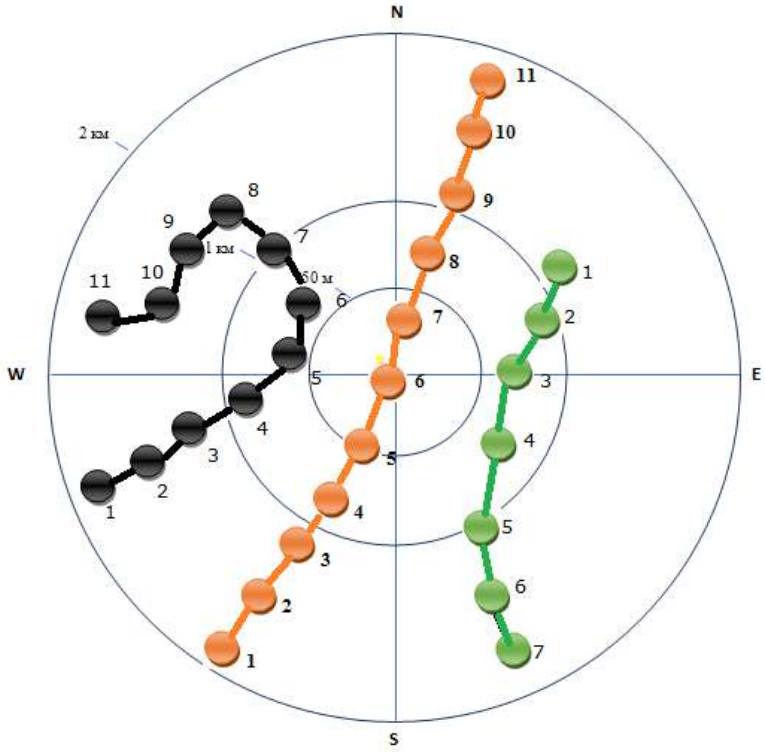


Fig. 38 Flight path (VP 12), 21.01.2021

Table 48 Target species log (VP 14), 21.01.2021

	Falco tinnunculus	**14:21**	1 14m	2 15m	3 10m	4 15m	5 15m	6 10m	7 15m				
	Aquila nipalensis	**15:36**	1 120m	2 125m	3 120m	4 125m	5 125m	6 130m	7 135m	8 135m	9 130m	10 135m	11 135m
	Buteo rufinus	**15:53**	1 60m	2 75m	3 70m	4 75m	5 85m	6 80m	7 85m	8 95m	9 90m	10 95m	11 95m

VP. 13

Date: 22.01.2021. Start and end time: 9:47 – 12:47
Weather:
The air temperature: start -5 °C end -3 °C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 14

Date: 22.01.2021. Start and end time: 13:32 – 16:37
Weather:
The air temperature: start -3°C end -4 °C sky half cloudy, cold
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP.1

Date: 23.01.2021. Start and end time: 9:52– 12:54

Weather:

The air temperature: start -3°C end -2°C, sky half cloudy, cold

Wind speed approx. (6-7 m/s) It rained

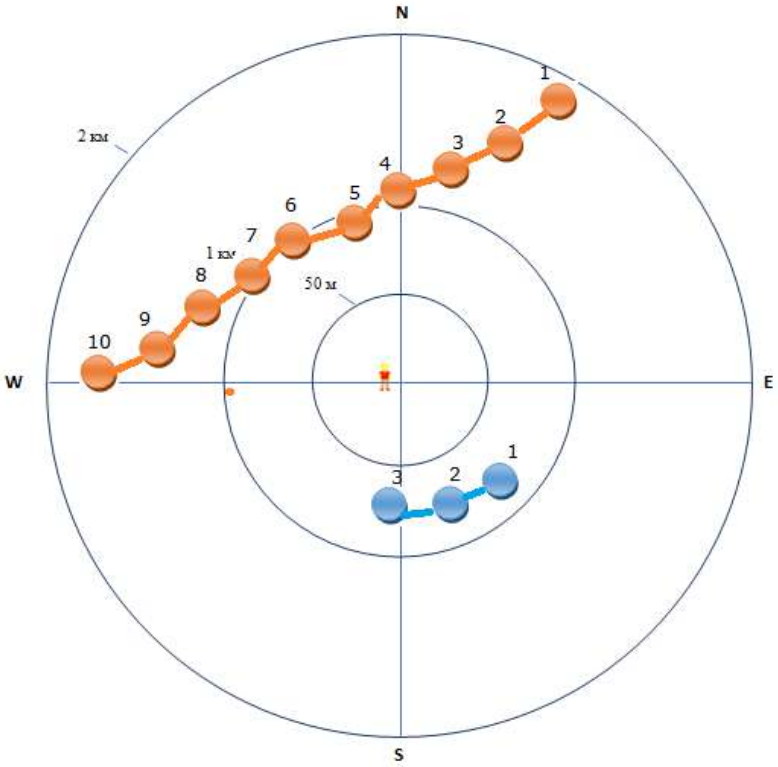


Fig. 39 Flight path (VP 1), 23.01.2021

Table 49 Target species log (VP 1), 23.01.2021

	Athene noctua	**10:23**	1 5m	2 5m	3 0m							
	Haliaeetus albicilla	**11:19**	1 125m	2 125m	3 120m	4 125m	5 125m	6 125m	7 120m	8 125m	9 125m	10 120m

VP.2

Date: 23.01.2021. Start and end time: 13:29–16:31
Weather:
The air temperature: start -2°C end -3°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) It rained
Primary species not found

VP.4

Date: 24.01.2021. Start and end time: 9:16 –12:16
Weather:
The air temperature: start -2°C end 0°C cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation

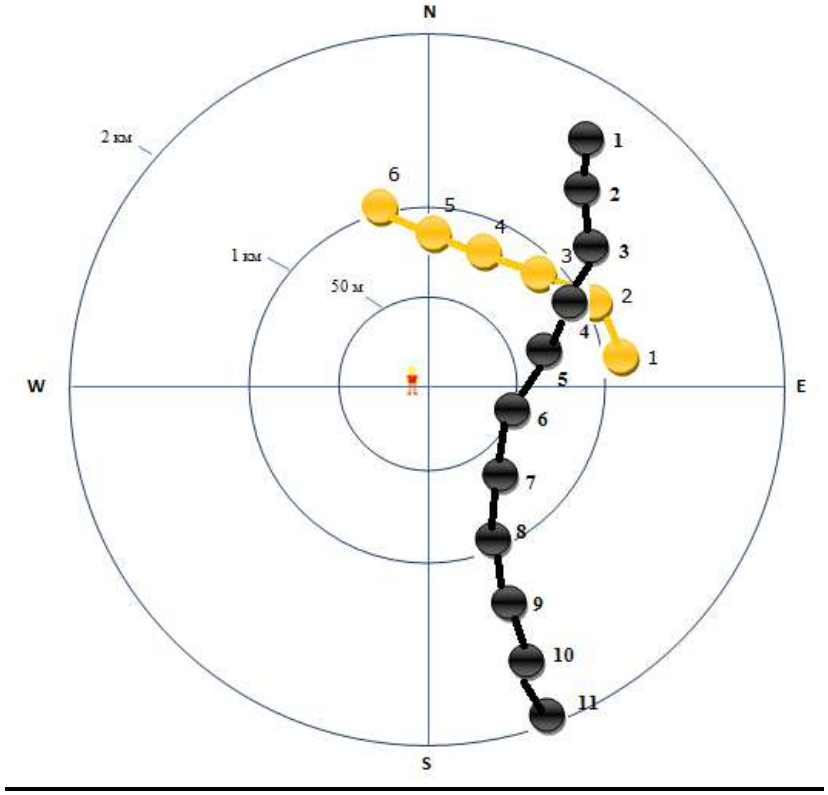


Fig. 40 Flight path (VP 4), 24.01.2021

Table 50 Target species log (VP 4), 24.01.2021

	Buteo rufinus	**11:57**	1 30m	2 25m	3 15m	4 40m	5 50m	6 55m						
	Aquila chrysaetos	**12:09**	1 130m	2 135m	3 135m	4 120m	5 120m	6 125m	7 130m	8 135m	8 145m	9 040m	10 140m	11 140m

VP. 3

Date: 24.01.2021. Start and end time: 13:12 – 16:15
Weather:
The air temperature: start 0°C end -2°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP. 5

Date: 25.01.2021. Start and end time: 9:24 – 12:36
Weather:
The air temperature: start -3°C end -1°C sky half cloudy, cold
Wind speed approx. (5-7 m/s) No precipitation

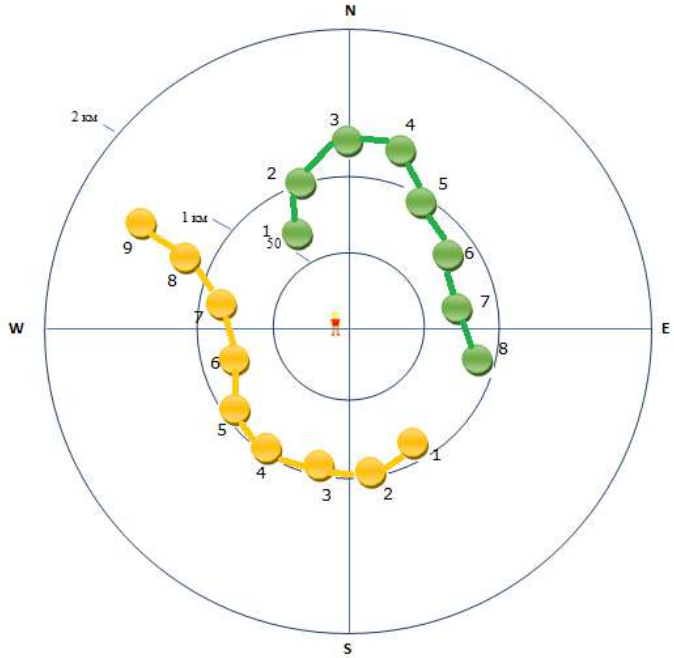


Fig. 41 Flight path (VP 5), 25.01.2021

Table 51 Target species log (VP 5), 25.01.2021

	Haliaeetus albicilla	**11:09**	1 120m	2 120m	3 120m	4 115m	5 115m	6 110m	7 115m	8 115m	9 115m
	Falco tinnunculus	**12:23**	1 15m	2 10m	3 10m	4 15m	5 15m	6 10m	7 15m	8 15m	

VP. 6

Date: 25.01.2021. Start and end time: 13:16 – 16:19
Weather:
The air temperature: start -1°C end -2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 7

Date: 26.01.2021. Start and end time: 9:28 – 12:28
Weather:
The air temperature: start -1°C end 0°C sky half cloudy, cold
Wind speed approx. (6-7 m/s) No precipitation
Primary species not found

VP. 10

Date: 26.01.2020. Start and end time: 13:14 – 16:18
Weather:
The air temperature: start 0°C end -1°C sky half cloudy, cold
Wind speed approx. (5-7 m/s) No precipitation

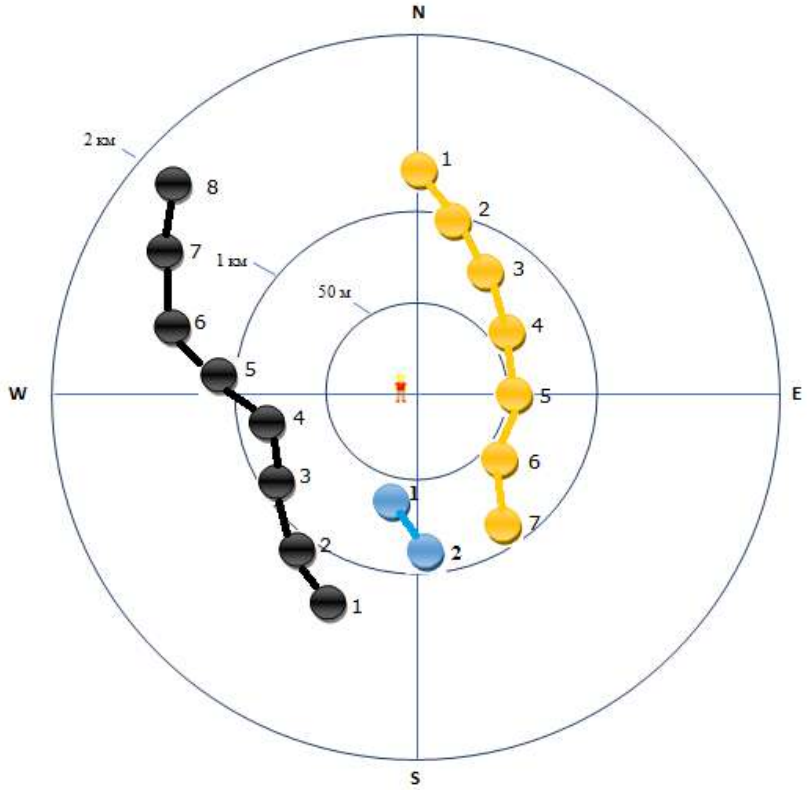


Fig. 42 Flight path (VP 10), 26.01.2021

Table 52 Target species log (VP 10), 26.01.2021

	Falco cherrug	**14:13**	1 30m	2 20m	3 30m	4 15m	5 15m	6 10m	7 15m	
	Aquila nipalensis	**15:28**	1 90m	2 90m	3 90m	4 95m	5 95m	6 90m	7 95m	8 95m
	Athene noctua	**16:08**	1 3m	2 0m						

VP.8

Date: 27.01.2021. Start and end time: 9:23– 12:28

Weather:

The air temperature: start -1°C end 2°C sky half cloudy, cold

Wind speed approx. (5-6 m/s) No precipitation

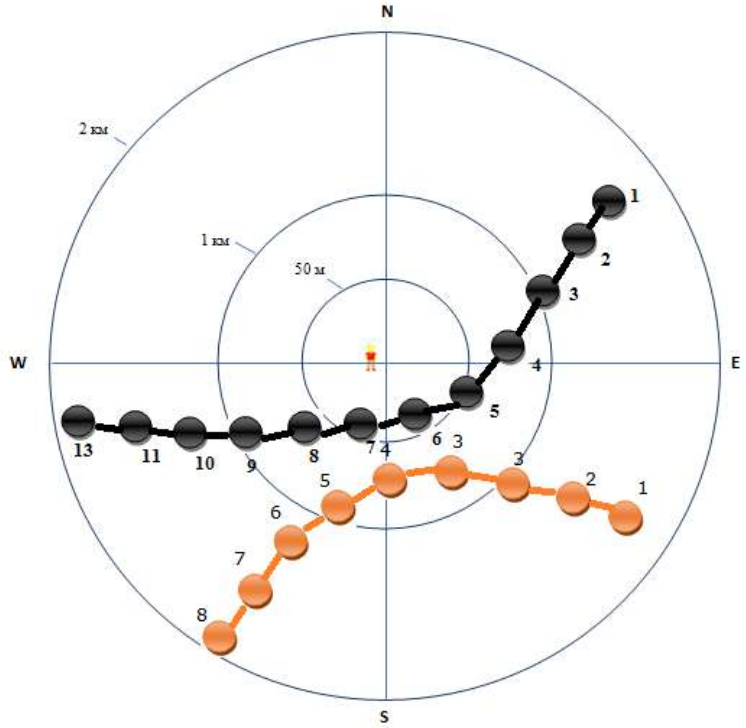


Fig. 43 Flight path (VP 8), 27.01.2021

Table 53 Target species log (VP 8), 27.01.2021

	Aquila chrysaetos	**11:13**	1 130m	2 120m	3 130m	4 125m	5 125m	6 120m	7 125m	8 125m	9 125m	10 120m	11 125m	12 125m	13 125m
	Circus cyaneus	**10:14**	1 30m	2 30m	3 20m	4 25m	5 25m	6 20m	7 25m	8 25m	9 125m	10 20m			

VP. 9

Date: 27.01.2021. Start and end time: 13:32 – 16:36

Weather:

The air temperature: start 3°C end -1°C sky half cloudy, cold

Wind speed approx. (5-7 m/s) No precipitation

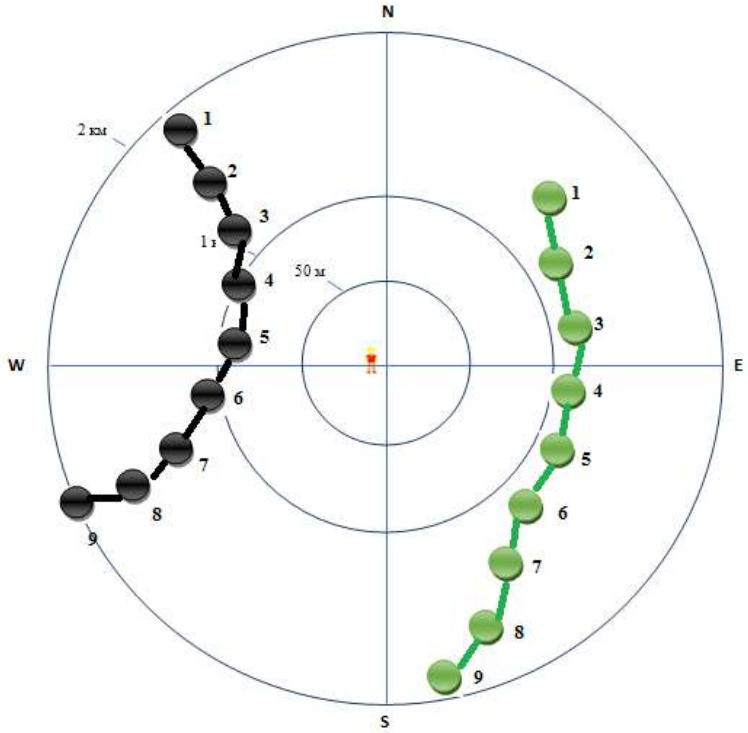


Fig. 44 Flight path (VP 9), 27.01.2021

Table 54 Target species log (VP 9), 27.01.2021

	Aquila chrysaetos	**14:09**	1 120m	2 120m	3 120m	4 115m	5 115m	6 110m	7 115m	8 115m	9 115m
	Gyps fulvus	**15:23**	1 160m	2 160m	3 160m	4 165m	5 165m	6 160m	7 165m	8 165m	9 165m

VP. 11

Date: 28.01.2021. Start and end time: 9:13 – 12:19
Weather:
The air temperature: start -1°C end 2°C sky half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 12

Date: 28.01.2021. Start and end time: 13:13 – 16:19

Weather:

The air temperature: start 2°C end 1°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

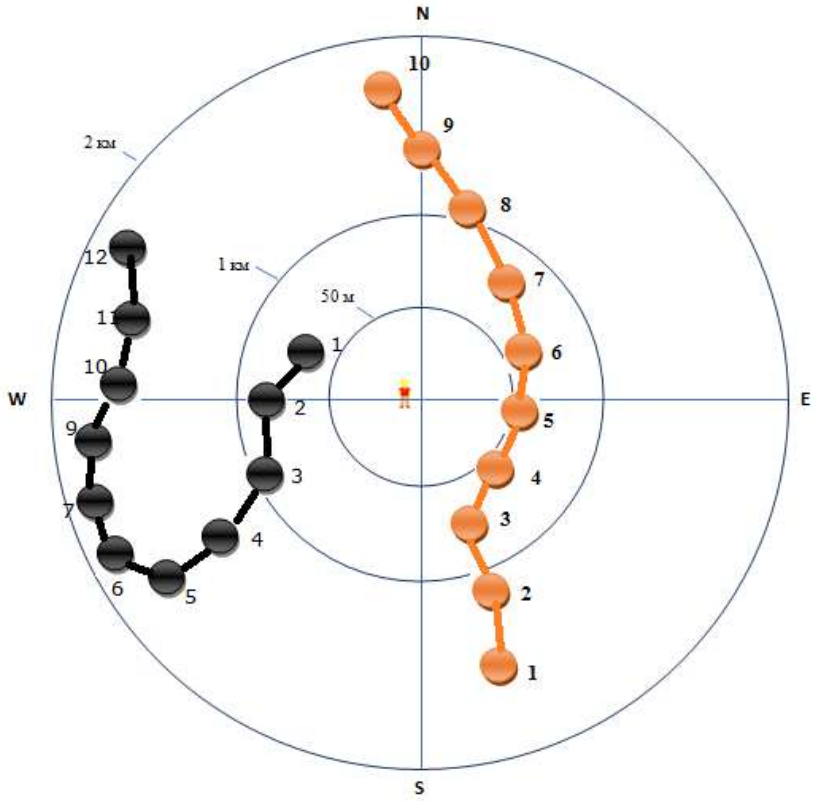


Fig. 45 Flight path (VP 12), 28.01.2021

Table 55 Target species log (VP 12), 28.01.2021

	Aquila chrysaetos	**14:09**	1 170m	2 170m	3 170m	4 175m	5 175m	6 170m	7 175m	8 175m	9 175m	10 170m	11 170m	12 170m
	Buteo buteo	**15:23**	1 60m	2 40m	3 30m	4 25m	5 15m	6 20m	7 35m	8 25m	9 15m	10 20m		

VP. 13

Date: 29.01.2021. Start and end time: 9:02 – 12:10

Weather:

The air temperature: start 2°C end 4°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

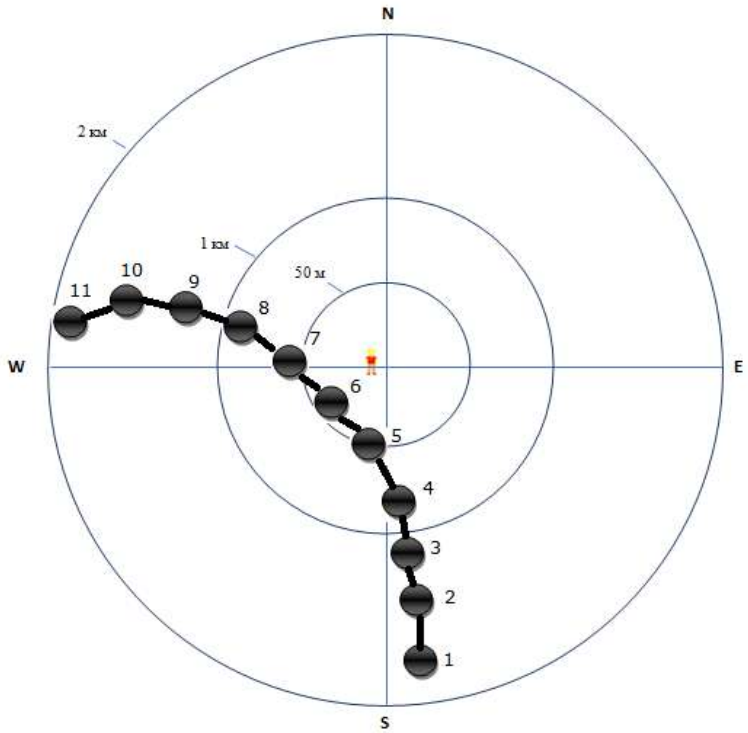


Fig. 46 Flight path (VP 13), 29.01.2021

Table 56 Target species log (VP 13), 29.01.2021

	Aegypius monachus	**11:09**	1 220m	2 220m	3 220m	4 225m	5 225m	6 220m	7 225m	8 225m	9 215m	10 210m	11 210m

VP. 14

Date: 29.01.2021. Start and end time: 13:02 – 16:11

Weather:

The air temperature: start 4°C end 3°C sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

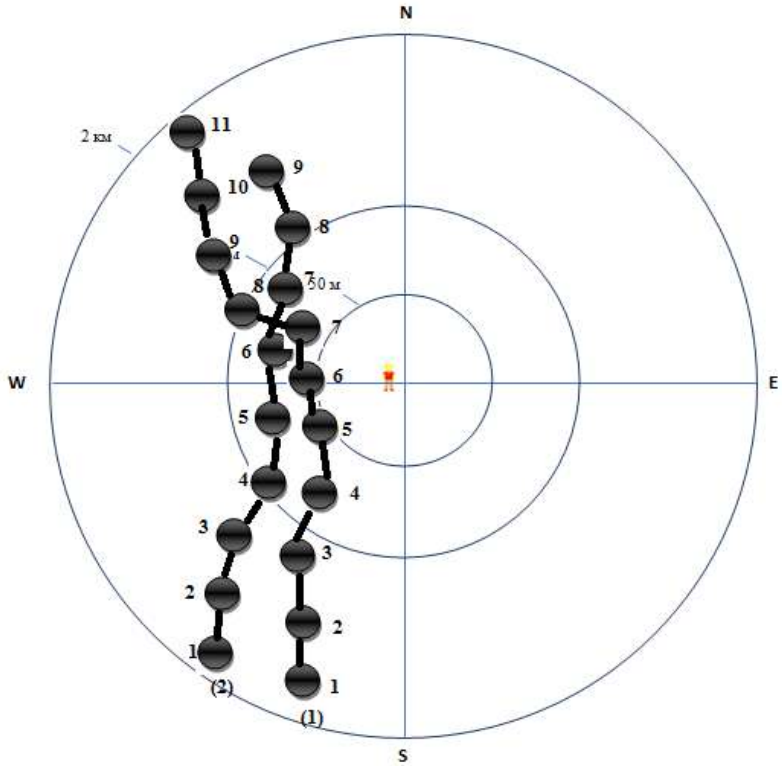


Fig. 47 Flight path (VP 14), 29.01.2021

Table 57 Target species log (VP 14), 29.01.2021

	Aquila chrysaetos (1)	**14:09**	1 160m	2 160m	3 160m	4 165m	5 165m	6 170m	7 165m	8 165m	9 165m	10 160m	11 160m
	Aquila chrysaetos (2)	**14:10**	1 160m	2 160m	3 160m	4 165m	5 165m	6 170m	7 165m	8 165m	9 165m		

VP survey results in February

VP. 1

Date: 01.02.2021. Start and end time: 9:26 –12:27
Weather:
The air temperature: start 1°C end 2°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 2

Date: 01.02.2021. Start and end time: 13:23 – 16:25

Weather:

The air temperature: start 2°C end 1°C cloudy,

Wind speed approx. (4-5 m/s) No precipitation

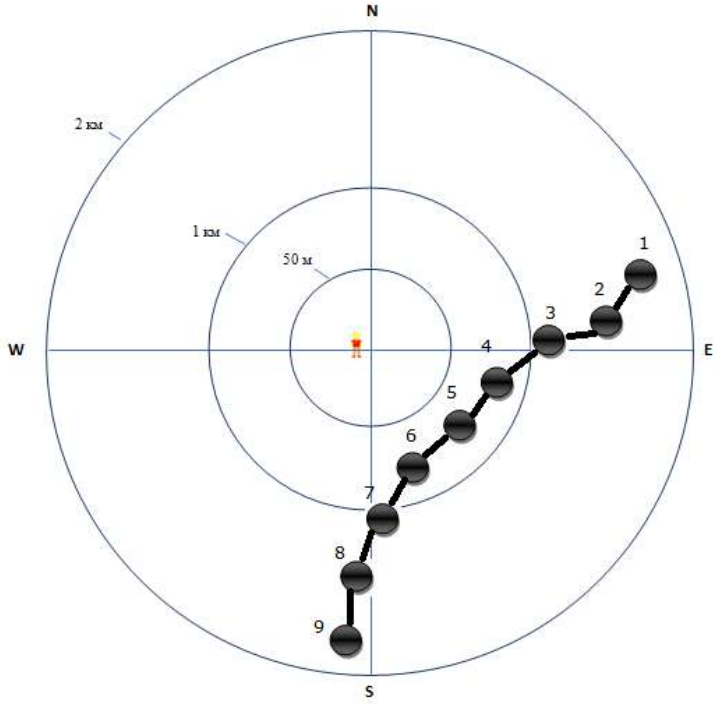


Fig. 48 Flight path (VP 2), 01.02.2021

Table 58 Target species log (VP 2), 01.02.2021

	Aquila chrysaetos	**13:41**	1 130m	2 130m	3 130m	4 125m	5 125m	6 120m	7 120m	8 120m	9 120m

VP. 3

Date: 02.02.2021. Start and end time: 9:09 – 12:09
Weather:
The air temperature: start -2°C end 1°C cloudy, cold
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP.4

Date: 02.02.2021. Start and end time: 12:58 – 16:06

Weather:

The air temperature: start 0°C end -1°C cloudy, cold

Wind speed approx. (5-7 m/s) No precipitation

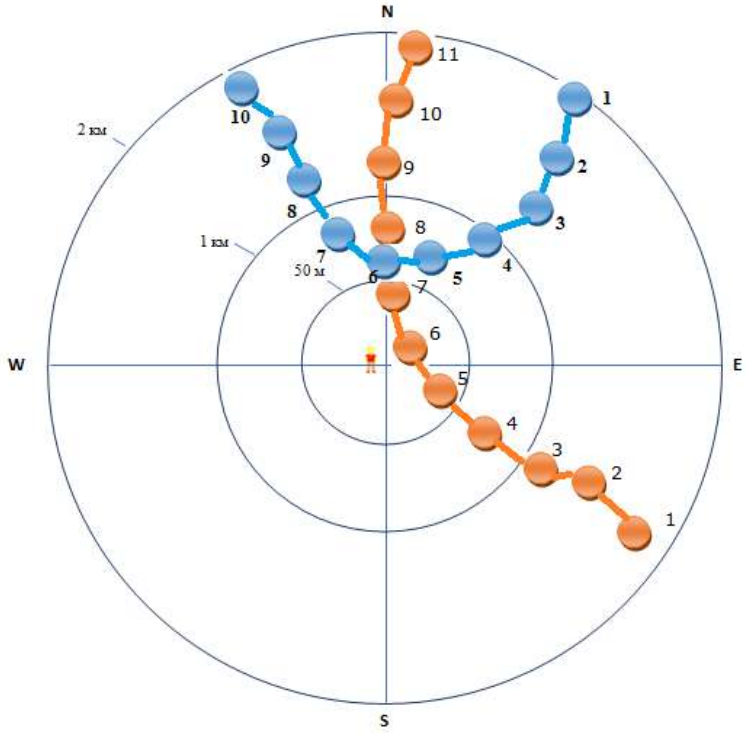


Fig. 49 Flight path (VP 4), 02.02.2021

Table 59 Target species log (VP 4), 02.02.2021

	Buteo rufinus	**14:11**	1 75m	2 75m	3 120m	3 120m	4 125m	5 125m	6 125m	7 125m	8 125m	9 75m	10 75m	11 120m
	Haliaeetus albicilla	**15:23**	1 120m	2 125m	3 120m	3 120m	4 125m	5 125m	6 125m	7 125m	8 125m	9 135m	10 135m	

VP.5

Date: 03.02.2021. Start and end time: 9:18 – 12:18
Weather:
The air temperature: start-2°C end -1°C cloudy, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.6

Date: 03.02.2021. Start and end time: 13:28 – 16:29
Weather:
The air temperature: start -1°C end -2°C cloudy, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.7

Date: 04.02.2021. Start and end time: 9:28 – 12:29

Weather:

The air temperature: start -2°C end -1°C partly cloudy, cold

Wind speed approx. (5-7 m/s) No precipitation

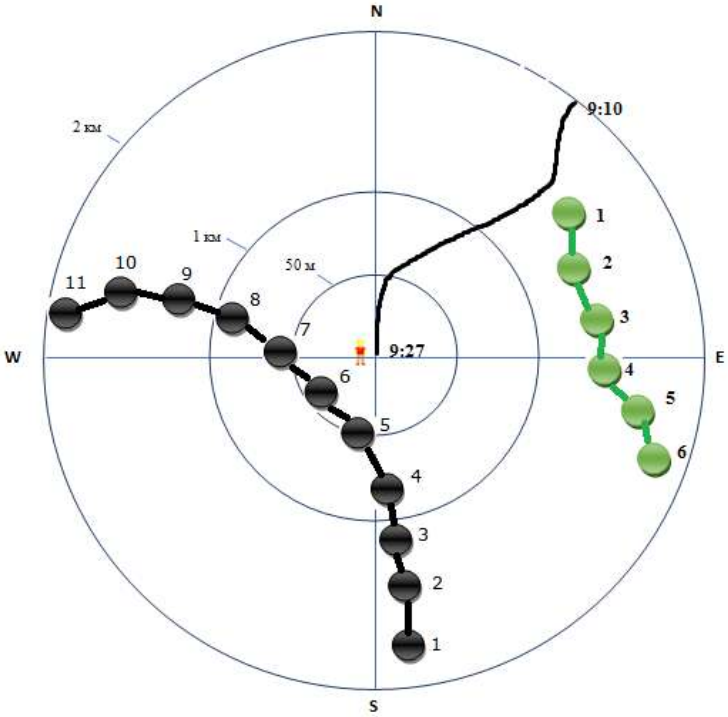


Fig. 50 Flight path (VP 7), 04.02.2021

Table 60 Target species log (VP 7), 04.02.2021

	Falco tinnunculus	**9:10**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m					
	Aqula chrysaetos	**11:42**	1 125 m	2 125 m	3 120 m	4 125 m	5 125 m	6 95m	7 95m	8 95m	9 125 m	10 125 m	11 125 m

VP. 10

Date: 04.02.2021. Start and end time: 13:49 – 16:53

Weather

The air temperature: start -1°C end- 2°C half cloudy, cold

Wind speed approx. (4-5 m/s) No precipitation

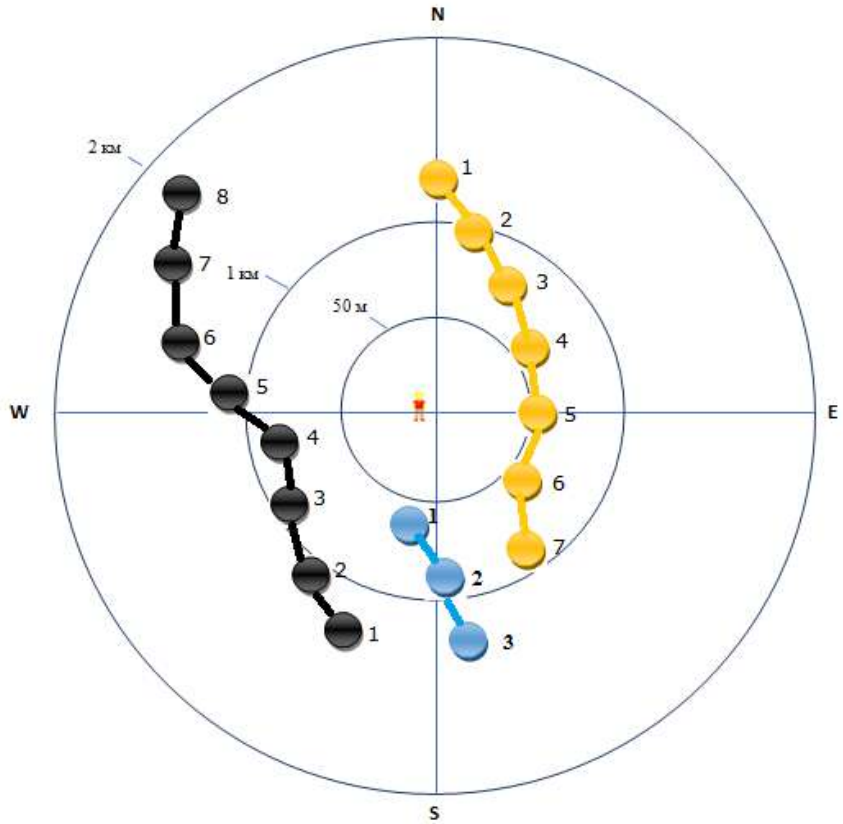


Fig. 51 Flight path (VP 10), 04.02.2021

Table 61 Target species log (VP 10), 04.02.2021

	Falco tinnunculus	**13:42**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m	7 15m	
	Aqula chrysaetos	**14:22**	1 125m	2 125m	3 120m	4 125m	5 125m	6 95m	7 95m	8 95m
	Athene noctua (is sitting)	**15:42**	1 0m	2 5m	3 0m					

VP.8

Date: 05.02.2021. Start and end time: 9:15 – 12:15
Weather:
The air temperature: start -1°C end -1°C is sunny, cold
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.9

Date: 05.02.2021. Start and end time: 13:23 – 16:29

Weather:

The air temperature: start -1°C end -1°C is sunny, cold

Wind speed approx. (5-7 m/s) No precipitation

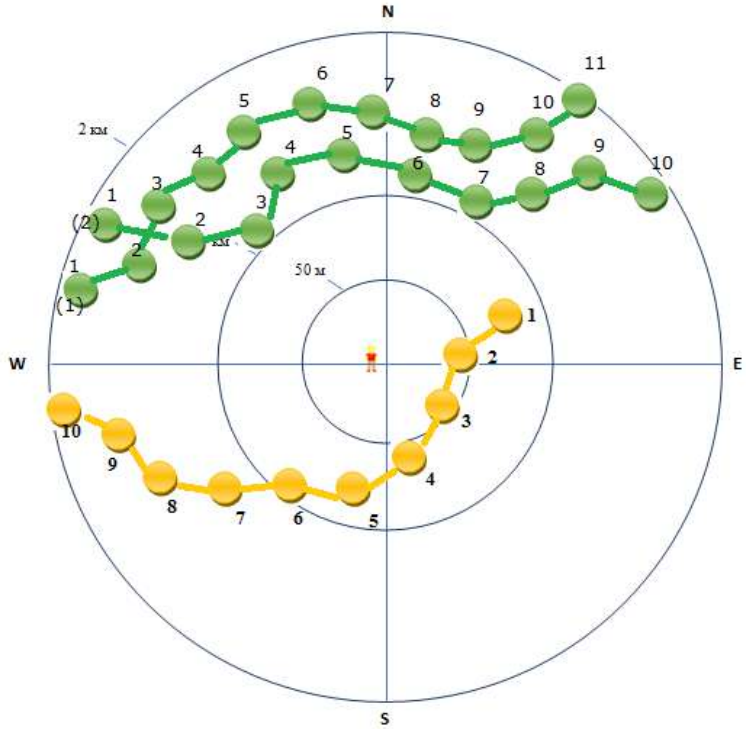


Fig. 52 Flight path (VP 9), 05.02.2021

Table 62 Target species log (VP 9), 05.02.2021

	Buteo rufinus (is sitting)	**13:25**	1 0m	2 15m	3 30m	4 35m	5 45m	6 40m	7 45m	8 60m	9 65m	10 65m	

	Gyps fulvus (1)	**15:25**	1 160m	2 130m	3 140m	4 95m	5 95m	6 95m	7 130m	8 135m	9 135m	10 155m	11 30m
	Gyps fulvus (2)	**15:26**	1 160m	2 130m	3 140m	4 95m	5 95m	6 95m	7 130m	8 135m	9 135m	10 30m	

VP.11

Date: 06.02.2021. Start and end time: 9:09 – 12:11
Weather:
The air temperature: start -2°C end -1°C half cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date: 06.02.2021. Start and end time: 12:52 – 15:52
Weather:
The air temperature: start -1°C end -2°C half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation

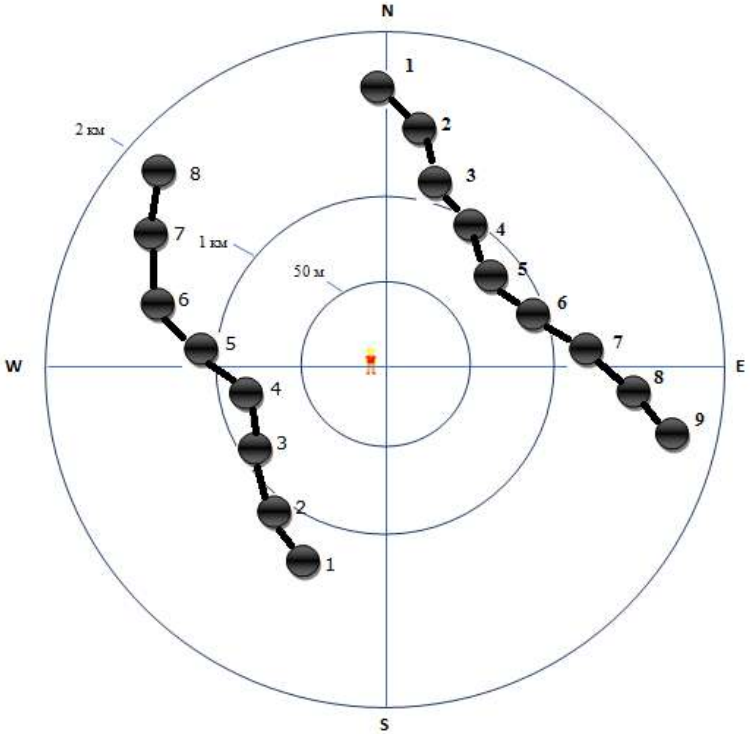


Fig. 53 Flight path (VP 12), 06.02.2021

Table 63 Target species log (VP 12), 06.02.2021

	Aquila chrysaetos (1)	**13:32**	1 150m	2 150m	3 120m	4 125m	5 135m	6 135m	7 130m	8 135m	
	Aquila chrysaetos (2)	**14:19**	1 150m	2 150m	3 120m	4 125m	5 135m	6 135m	7 130m	8 135m	9 130m

VP. 13

Date: 07.02.2021. Start and end time: 9:23–12:25
Weather:
The air temperature: start -1°C end 1°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation
Primary species not found

VP.14

Date: 07.02.2021. Start and end time: 13:16 – 16:15
Weather:
The air temperature: start 1°C end 0°C sky half cloudy, cold
Wind speed approx. (6-8 m/s) No precipitation

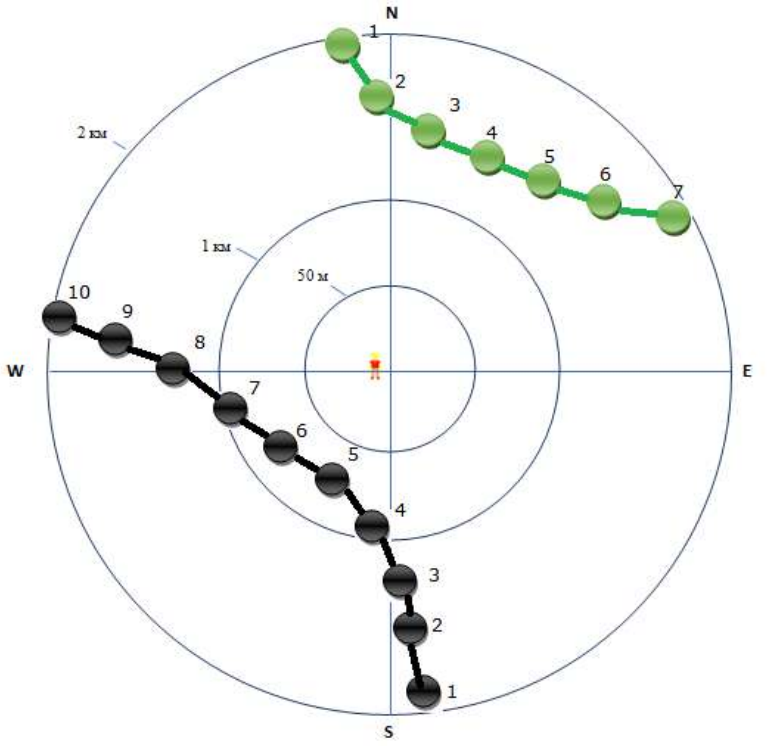


Fig. 54 Flight path (VP 14), 07.02.2021

Table 64 Target species log (VP 14), 07.02.2021

	Falco tinnunculus	**13:52**	1 20m	2 25m	3 25m	4 30m	5 30m	6 35m	7 35m			
	Aquila chrysaetos	**15:56**	1 120m	2 125m	3 125m	4 100m	5 100m	6 115m	7 115m	8 110m	9 110m	10 110m

VP. 1

Date: 08.02.2021. Start and end time: 9:06 – 12:10
Weather:
The air temperature: start -1°C end 0°C cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation

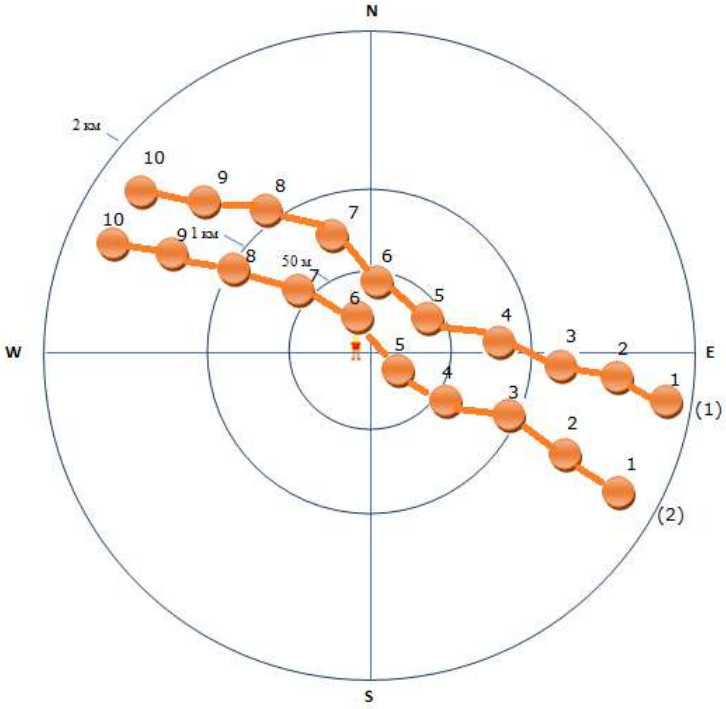


Fig. 55 Flight path (VP 1), 08.02.2021

Table 65 Target species log (VP 1), 08.02.2021

	Buteo rufinus (1)	**11:09**	1 60m	2 50m	3 50m	4 50m	5 55m	6 60m	7 65m	8 50m	9 55m	10 50m
	Buteo rufinus (2)	**11:09**	1 60m	2 50m	3 50m	4 50m	5 55m	6 60m	7 65m	8 50m	9 55m	10 50m

VP.2

Date: 08.02.2021. Start and end time: 12:15– 15:16
Weather:
The air temperature: start 1°C end 0°C cloudy, cold
Wind speed approx. (5-6 m/s) No precipitation

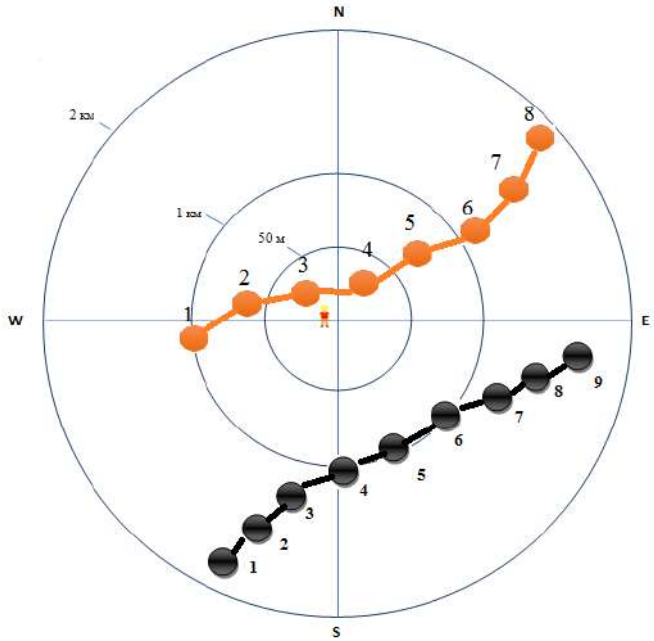


Fig. 56 Flight path (VP 2), 08.02.2021

Table 66 Target species log (VP 2), 08.02.2021

	Buteo rufinus (is sitting)	**10:42**	1 0m	2 15m	3 25m	4 35m	5 35m	6 40m	7 45m	8 45m	
	Aquila chrysaetos	**11:26**	1 120m	2 120m	3 130m	4 125m	5 125m	6 120m	7 125m	8 125m	9 120m

VP.3

Date: 09.02.2021. Start and end time: 9:12– 12:12
Weather:
The air temperature: start 2°C end 3°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.4

Date: 09.02.2021. Start and end time: 13:08 – 16:09
Weather:
The air temperature: start 3°C end 2°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation

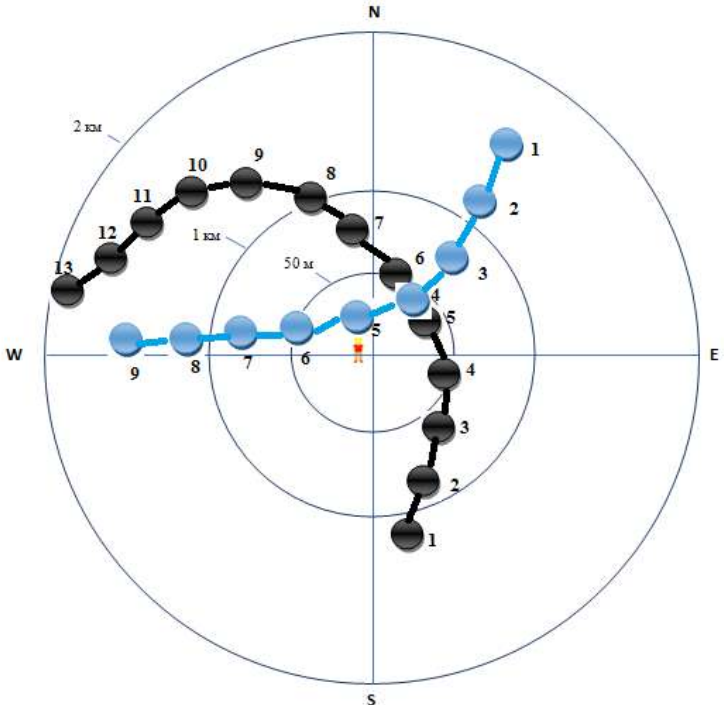


Fig. 57 Flight path (VP 4), 09.02.2021

Table 67 Target species log (VP 4), 09.02.2021

	Aquila chrysaetos	**12:38**	1 160m	2 155m	3 160m	4 165m	5 165m	6 160m	7 165m	8 160m	9 165m	10 160m	11 165m	12 165m	13 160m
	Haliaeetus albicilla	**14:52**	1 130m	2 135m	3 120m	4 125m	5 125m	6 120m	7 125m	8 120m	9 125m				

VP. 5

Date: 10.02.2021. Start and end time: 9:13– 12:14
Weather:
The air temperature: start 3°C end 8°C cloudy
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP 6

Date: 10.02.2021. Start and end time: 13:56 – 16:03
Weather:
The air temperature: start 8°C end 2°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation

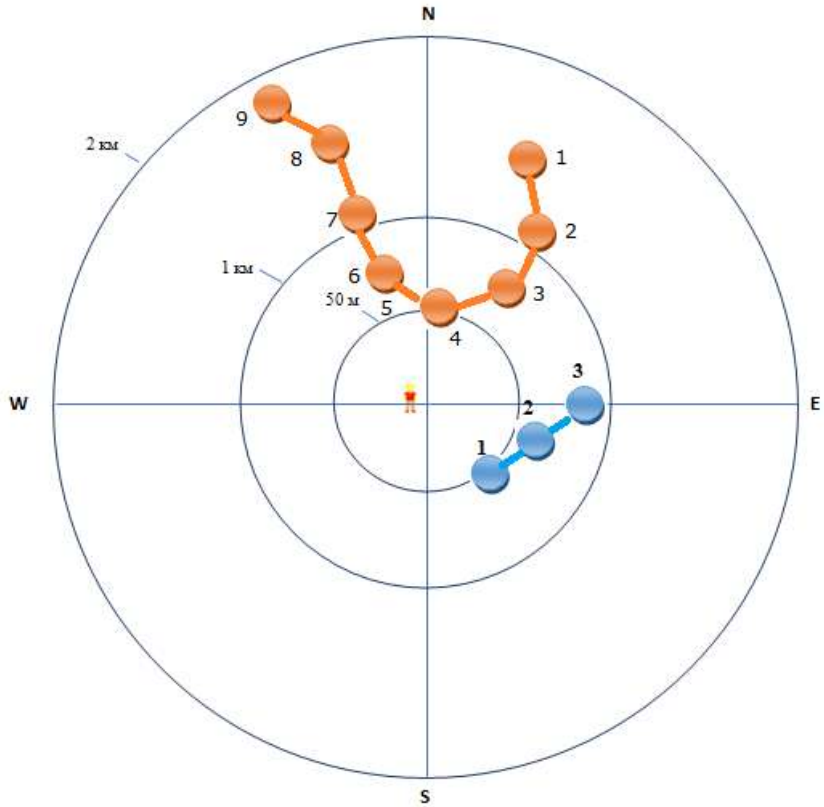


Fig. 58 Flight path (VP 6), 10.02.2021

Table 68 Target species log (VP 6), 10.02.2021

	Athene noctua (is sitting)	**14:28**	1 0m	2 5m	3 0m						
	Falco tinnunculus	**14:49**	1 20m	2 25m	3 20m	4 25m	5 25m	6 20m	7 20m	8 25m	9 20m

VP.7

Date: 11.02.2021. Start and end time: 9:42 – 12:42
Weather:
The air temperature: start 3°C end 12°C is sunny,
Wind speed approx. (5-6 m/s) No precipitation

Primary species not found

VP.10

Date: 11.02.2021. Start and end time: 13:26 – 16:29
Weather:
The air temperature: start 12°C end 6°C is sunny,
Wind speed approx. (4-6 m/s) No precipitation

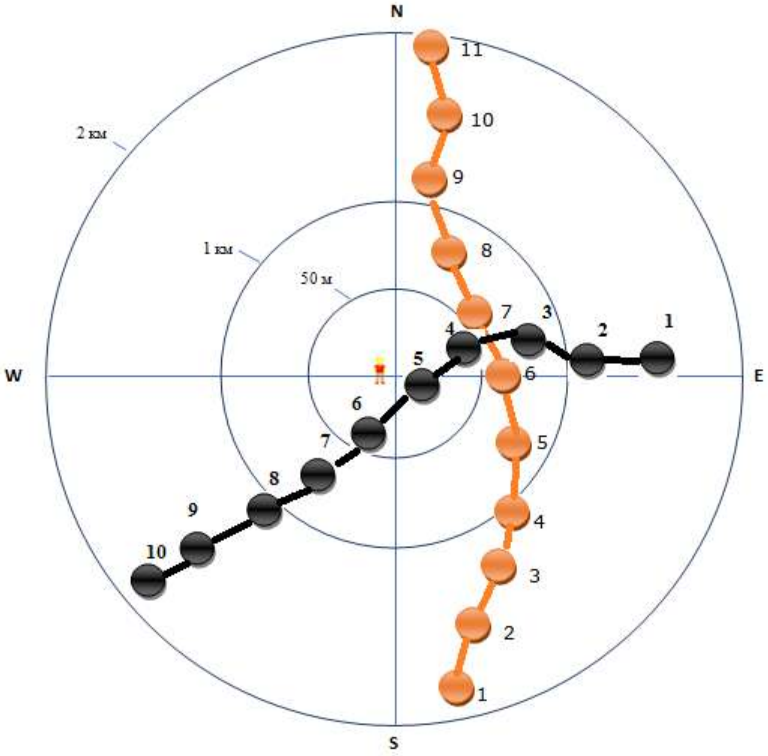


Fig. 59 Flight path (VP 10), 11.02.2021

Table 69 Target species log (VP 10), 11.02.2021

	Gypaetus barbatus	**13:52**	1 180m	2 185m	3 180m	4 185m	5 185m	6 180m	7 180m	8 185m	9 180m	10 185m	11 180m
	Aquila nipalensis	**14:47**	1 155m	2 150m	3 155m	4 155m	5 150m	6 150m	7 155m	8 150m	9 155m	10 150m	

VP. 8

Date: 12.02.2021. Start and end time: 8:58 – 11:58
Weather:
The air temperature: start 4°C end 12°C sky half cloudy
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 9

Date: 12.02.2021. Start and end time:12:49 – 15:49

Weather:

The air temperature: start 12°C end 5°C sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

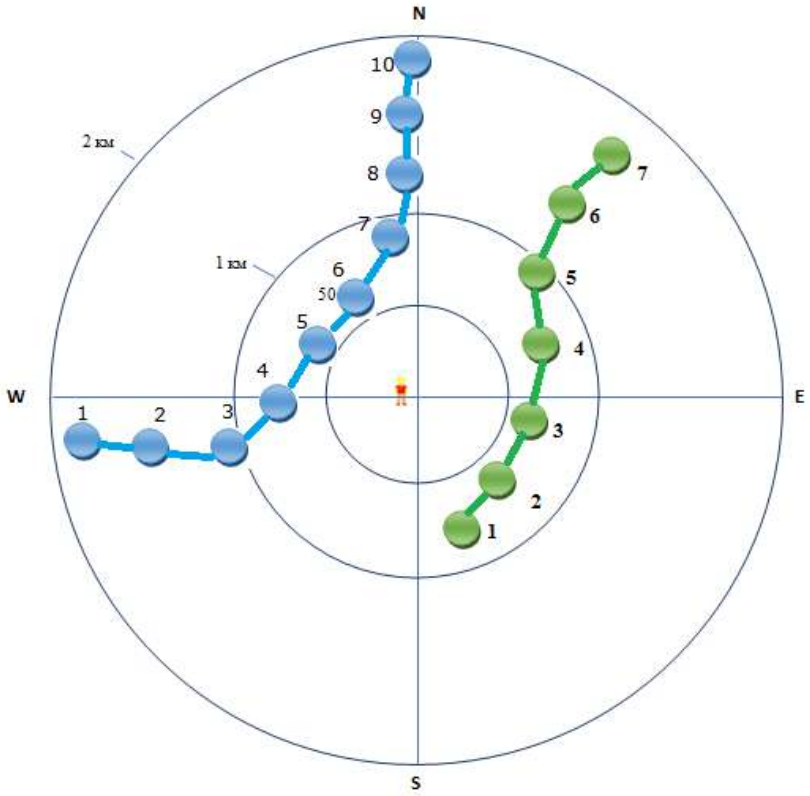


Fig. 60 Flight path (VP 9), 12.02.2021

Table 70 Target species log (VP 9), 12.02.2021

	Aegypius monachus	**14:28**	1 150m	2 155m	3 150m	4 155m	5 155m	6 150m	7 150m	8 155m	9 150m	10 155m
	Falco tinnunculus	**15:12**	1 20m	2 25m	3 20m	4 25m	5 25m	6 20m	7 20m			

VP. 11

Date: 14.02.2021. Start and end time: 9:34 – 12:34
Weather:
The air temperature: start 3°C end 9°C is sunny,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 12

Date: 14.02.2021. Start and end time: 13:15 – 16:15

Weather:

The air temperature: start 9°C end 5 °C is sunny

Wind speed approx. (5-6 m/s) No precipitation

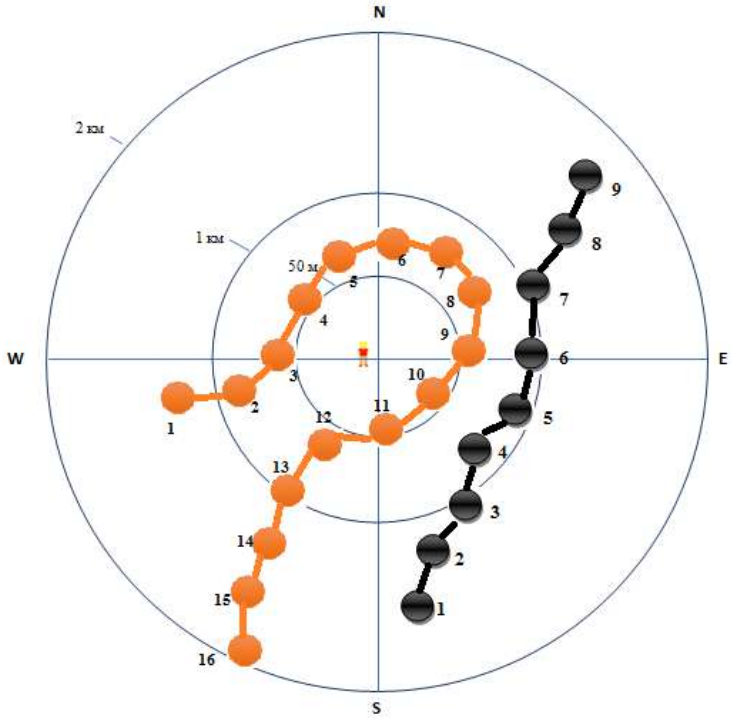


Fig. 61 Flight path (VP 12), 14.02.2021

Table 71 Target species log (VP 12), 14.02.2021

	Aquila nipalensis	**14:36**	1 120 m	2 125 m	3 120 m	4 125 m	5 125 m	6 130 m	7 135 m	8 135 m	9 135 m							
	Buteo rufinus	**15:53**	1 30m	2 35m	3 30m	4 35m	5 35m	6 30m	7 35m	8 35m	9 30m	10 35m	11 35m	12 35m	13 35m	14 30m	15 35m	16 35m

VP. 13

Date: 15.02.2021. Start and end time: 9:47 – 12:47
Weather:
The air temperature: start 2 °C end 8 °C is sunny
Wind speed approx. (6-8 m/s) No precipitation

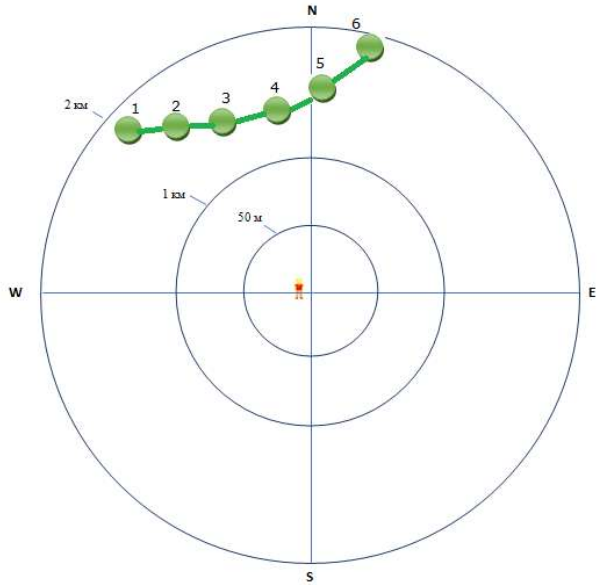


Fig. 62 Flight path (VP 13), 15.02.2021

Table 72 Target species log (VP 13), 15.02.2021

	Falco tinnunculus	**11:28**	1 15m	2 15m	3 15m	4 25m	5 25m	6 30m

VP. 14

Date: 15.02.2021. Start and end time: 13:32 – 16:37
Weather:
The air temperature: start 8°C end 5 °C is sunny
Wind speed approx. (5-6 m/s) No precipitation

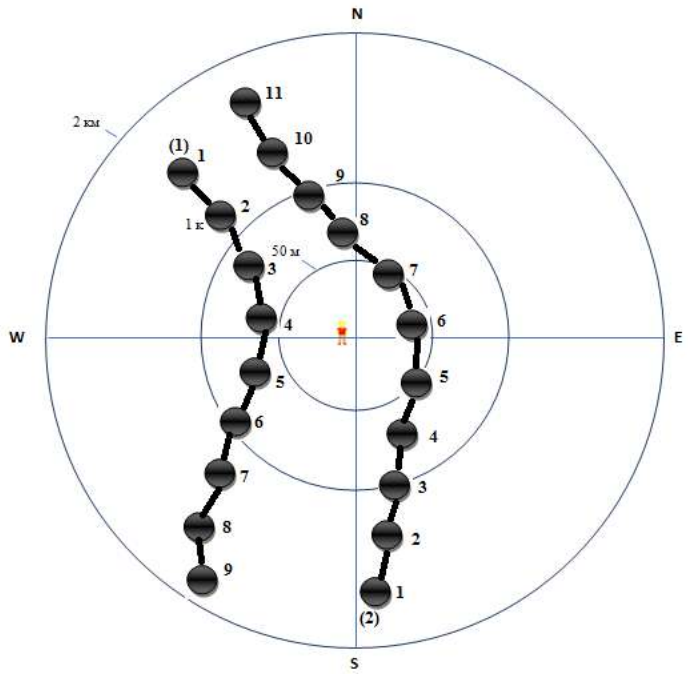


Fig. 63 Flight path (VP 14), 15.02.2021

Table 73 Target species log (VP 14), 15.02.2021

	Aqula chrysaetos (1)	**14:28**	1 150m	2 175m	3 170m	4 175m	5 155m	6 150m	7 150m	8 155m	9 150m		
	Aqula chrysaetos (2)	**15:12**	1 180m	2 175m	3 170m	4 175m	5 175m	6 170m	7 170m	8 155m	9 150m	10 155m	11 155m

VP.1

Date: 16.02.2021. Start and end time: 9:12– 12:14

Weather:

The air temperature: start 3°C end 6°C, sky half cloudy,
Wind speed approx. (3-5 m/s) No precipitation

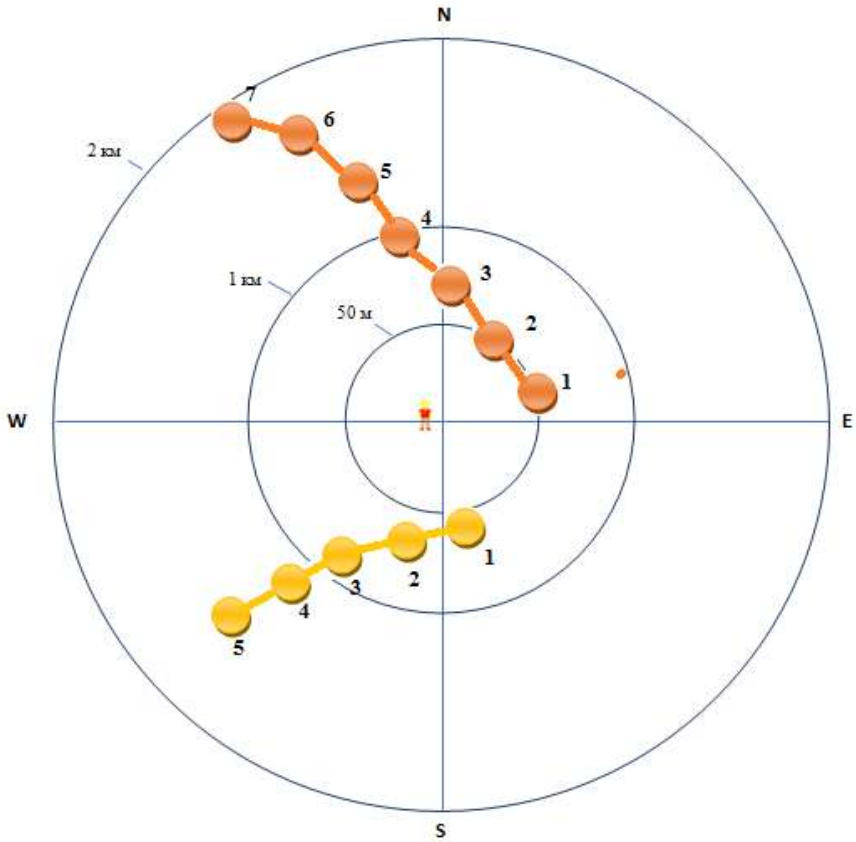


Fig. 64 Flight path (VP 1), 16.02.2021

Table 74 Target species log (VP 1), 16.02.2021

	Haliaeetus albicilla (is sitting)	**10:23**	1 0m	2 25m	3 50m	4 65m	5 65m	6 75m	7 70m
	Circus cyaneus	**11:19**	1 25m	2 25m	3 20m	4 25m	5 25m		

VP.2

Date: 16.02.2021. Start and end time: 13:29–16:31
Weather:
The air temperature: start 6°C end 3°C sky half cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.4

Date: 17.02.2021. Start and end time: 9:16 –12:16
Weather:
The air temperature: start 3°C end 12°C sky half cloudy,
Wind speed approx. (3-5 m/s) No precipitation

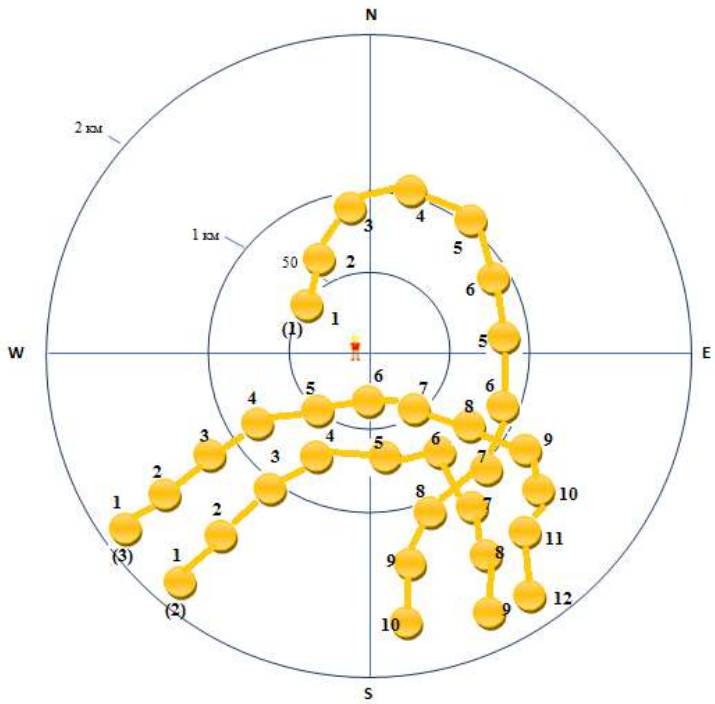


Fig. 65 Flight path (VP 4), 17.02.2021

Table 75 Target species log (VP 4), 17.02.2021

	Buteo rufinus (1) (is sitting)	**11:57**	1 0m	2 15m	3 135m	4 120m	5 120m	6 125m	7 130m	8 135m	8 145m	9 30m	10 30m		
	Buteo rufinus (2)	**11:59**	1 60m	2 65m	3 35m	4 20m	5 20m	6 25m	7 30m	8 35m	8 35m	9 30m			
	Buteo rufinus (3)	**12:01**	1 60m	2 65m	3 65m	4 60m	5 60m	6 65m	7 30m	8 35m	8 35m	9 40m	10 40m	11 40m	12 30m

VP. 3

Date: 17.02.2021. Start and end time: 13:12 – 16:15
Weather:
The air temperature: start 12°C end 3°C sky half cloudy,
Wind speed approx. (3-5 m/s) No precipitation

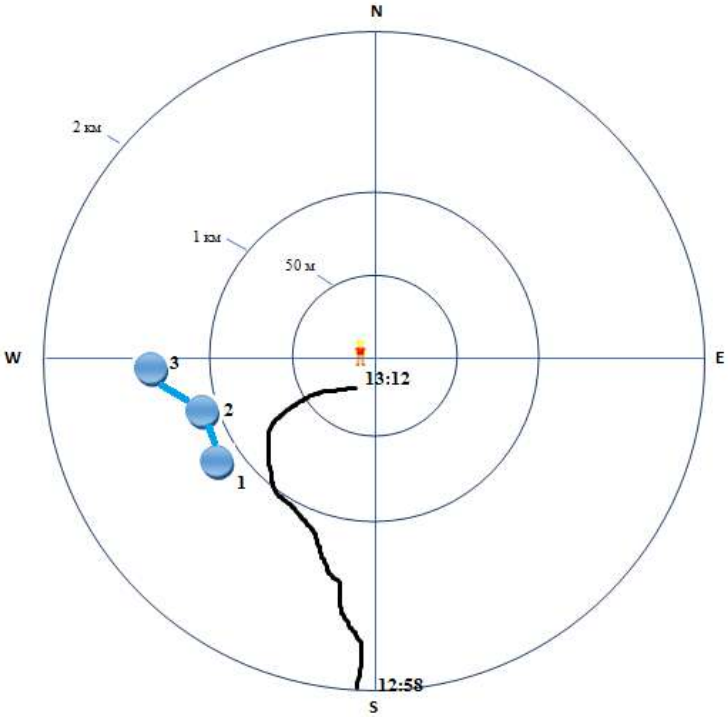


Fig. 66 Flight path (VP 3), 17.02.2021

Table 76 Target species log (VP 3), 17.02.2021

	Athene noctua (is sitting)	**13:07**	1 0m	2 5m	3 0m

VP. 5

Date: 18.02.2021. Start and end time: 9:24 – 12:36
Weather:
The air temperature: start 2°C end 12°C sky half cloudy,
Wind speed approx. (2-3 m/s) No precipitation

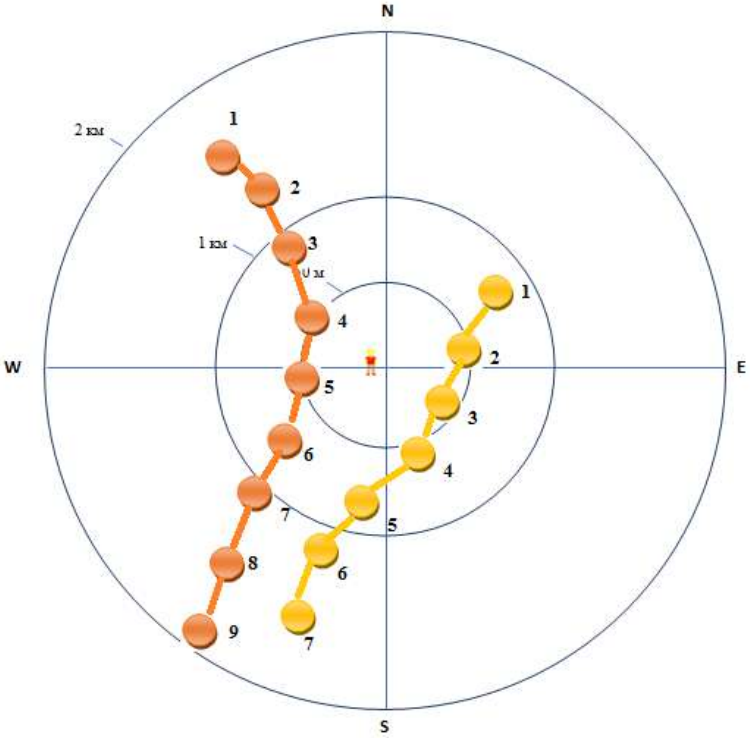


Fig. 67 Flight path (VP 5), 18.02.2021

Table 77 Target species log (VP 5), 18.02.2021

	Falco cherrug (is sitting)	**11:59**	1 0m	2 10m	3 10m	4 15m	5 15m	6 10m	7 15m		
	Buteo buteo	**12:23**	1 15m	2 10m	3 10m	4 15m	5 15m	6 10m	7 15m	8 15m	9 25m

VP. 6

Date: 18.02.2021. Start and end time: 13:16 – 16:19
Weather:
The air temperature: start 12°C end 3°C sky half cloudy,
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 7

Date: 19.02.2021. Start and end time: 9:28 – 12:28
Weather:
The air temperature: start -1°C end 3°C sky half cloudy, cold
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 10

Date: 19.02.2021. Start and end time: 13:14 – 16:18
Weather:
The air temperature: start 4°C end 2°C sky half cloudy,
Wind speed approx. (3-4 m/s) No precipitation

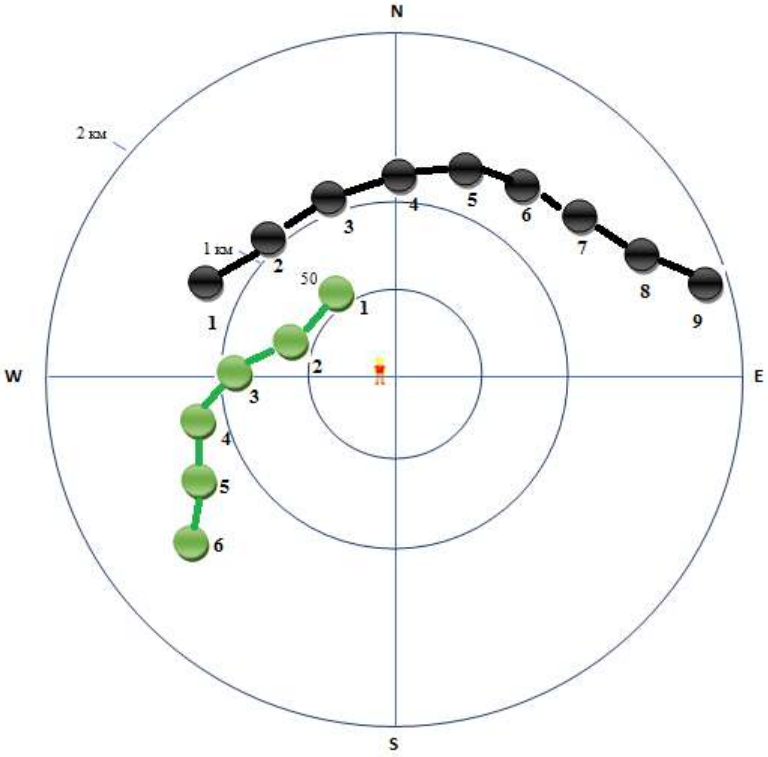


Fig. 68 Flight path (VP 10), 19.02.2021

Table 78 Target species log (VP 10), 19.02.2021

		Falco tinnunculus	**14:13**	1 30m	2 20m	3 30m	4 15m	5 15m	6 10m			
		Aquila nipalensis	**15:28**	1 90m	2 90m	3 90m	4 95m	5 95m	6 90m	7 95m	8 95m	9 95m

VP.8

Date: 20.02.2021. Start and end time: 9:23– 12:28
Weather:
The air temperature: start 1°C end 4°C sky half cloudy,
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 9

Date: 20.02.2021. Start and end time: 13:32 – 16:36
Weather:
The air temperature: start 5°C end 3°C sky half cloudy,
Wind speed approx. (5-7 m/s) No precipitation

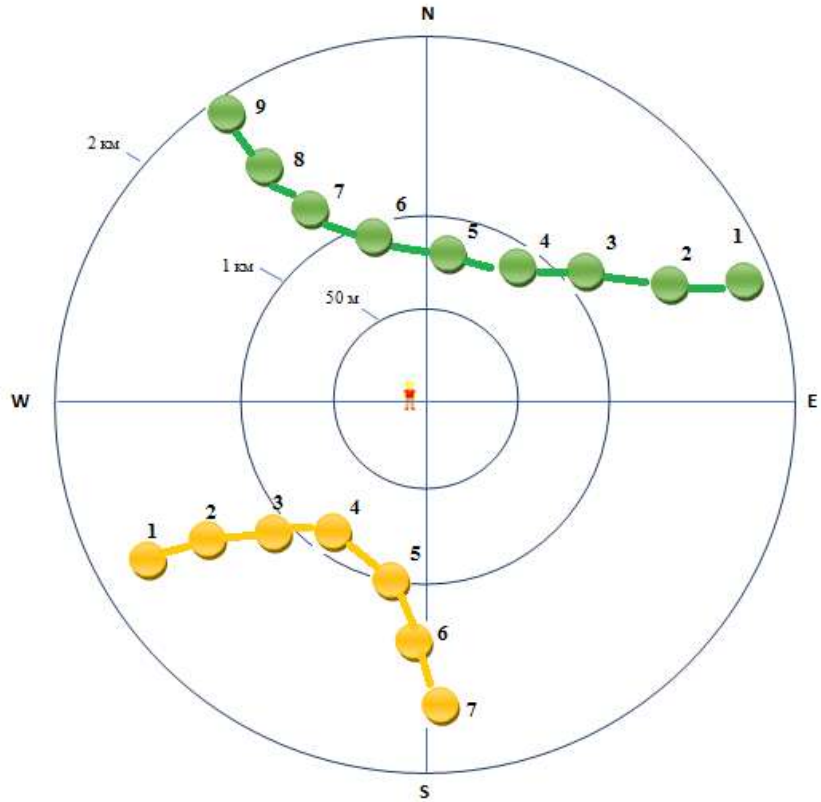


Fig. 69 Flight path (VP 9), 20.02.2021

Table 79 Target species log (VP 9), 20.02.2021

	Falco cherrug	**13:19**	1 20m	2 20m	3 20m	4 25m	5 25m	6 20m	7 25m		
	Falco tinnunculus	**15:23**	1 30m	2 30m	3 30m	4 25m	5 25m	6 20m	7 25m	8 25m	9 25m

VP. 12

Date: 21.02.2021. Start and end time: 9:13 – 12:19
Weather:
The air temperature: start 2°C end 4°C sky half cloudy,
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP. 11

Date: 21.02.2021. Start and end time: 13:13 – 16:19

Weather:

The air temperature: start 6°C end 4°C sky half cloudy

Wind speed approx. (2-4 m/s) No precipitation

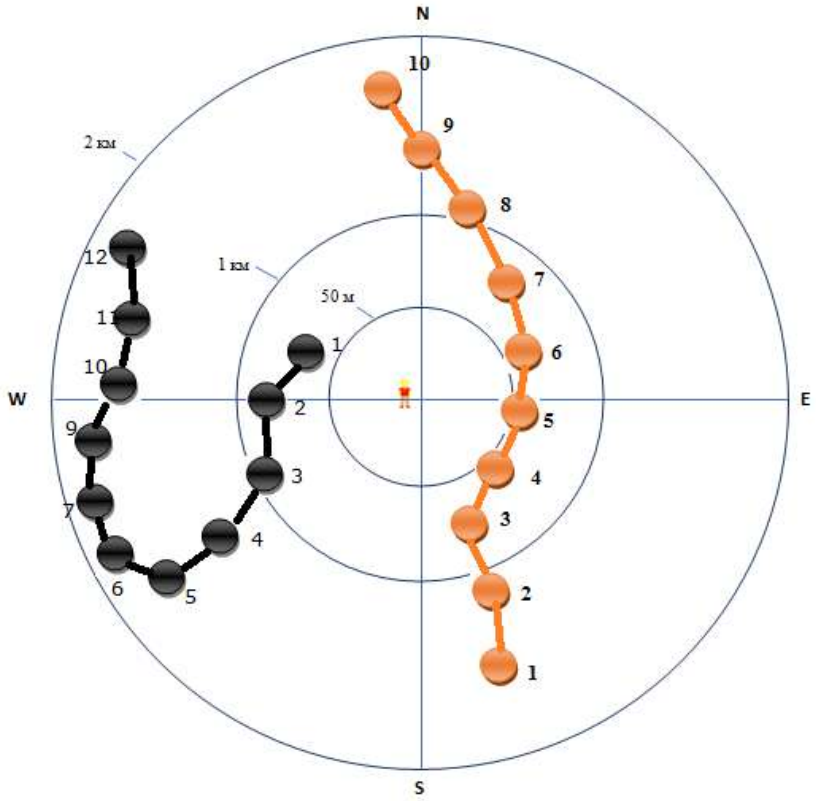


Fig. 70 Flight path (VP 11), 21.02.2021

Table 80 Target species log (VP 11), 21.02.2021

	Aquila chrysaetos	**14:09**	1 170m	2 170m	3 170m	4 175m	5 175m	6 170m	7 175m	8 175m	9 175m	10 170m	11 170m	12 170m
	Buteo buteo	**15:23**	1 60m	2 40m	3 30m	4 25m	5 15m	6 20m	7 35m	8 25m	9 15m	10 20m		

VP. 13

Date: 22.02.2021. Start and end time: 9:02 – 12:10

Weather:

The air temperature: start 2°C end 4°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

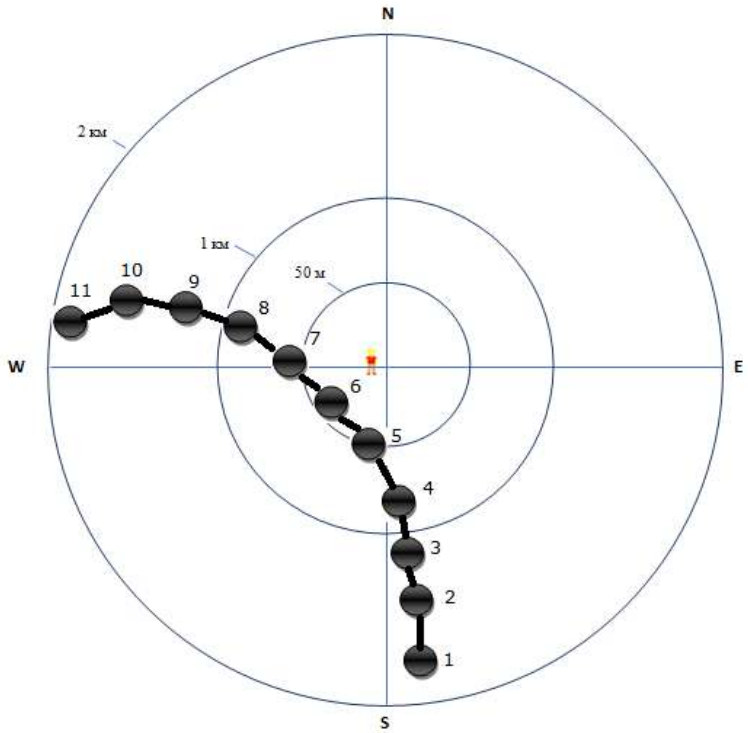


Fig. 71 Flight path (VP 13), 22.02.2021

Table 81 Target species log (VP 13), 22.02.2021

	Aquila chrysaetos	**11:09**	1 200m	2 200m	3 200m	4 205m	5 205m	6 200m	7 205m	8 205m	9 205m	10 210m	11 210m

VP. 14

Date: 22.02.2021. Start and end time: 13:02 – 16:11

Weather:

The air temperature: start 5°C end 3°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

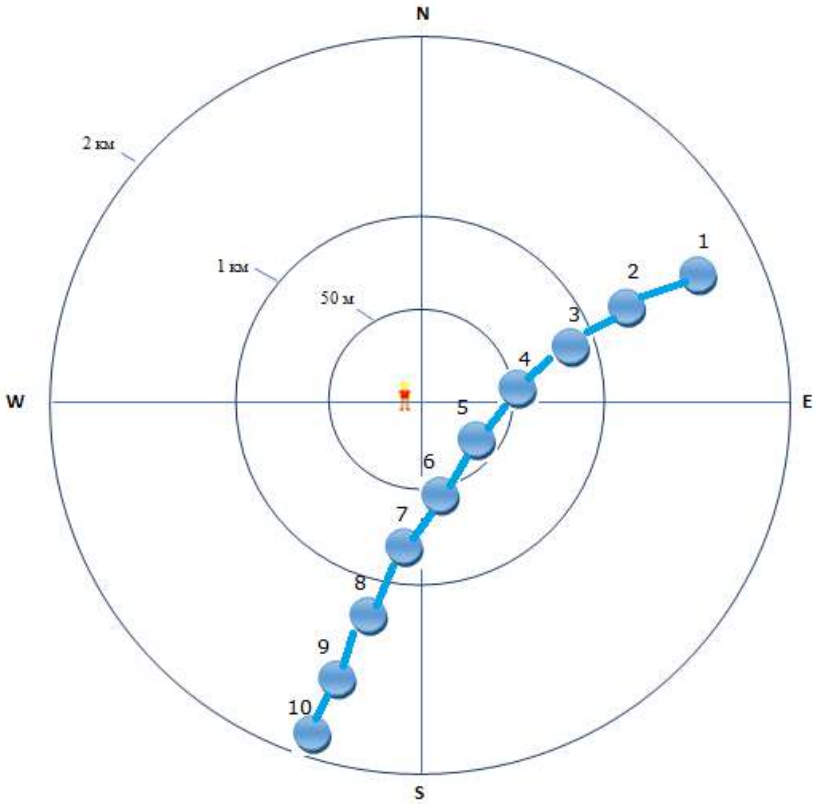


Fig. 72 Flight path (VP 14), 22.02.2021

Table 82 Target species log (VP 14), 22.02.2021

	Aquila chrysaetos	**15:09**	1 160m	2 160m	3 160m	4 165m	5 165m	6 170m	7 165m	8 165m	9 165m	10 160m

VP. 1

Date: 24.02.2021. Start and end time: 9:02 – 12:10

Weather:

The air temperature: start 1°C end 2°C sky half cloudy.

Wind speed approx. (4-6 m/s) No precipitation

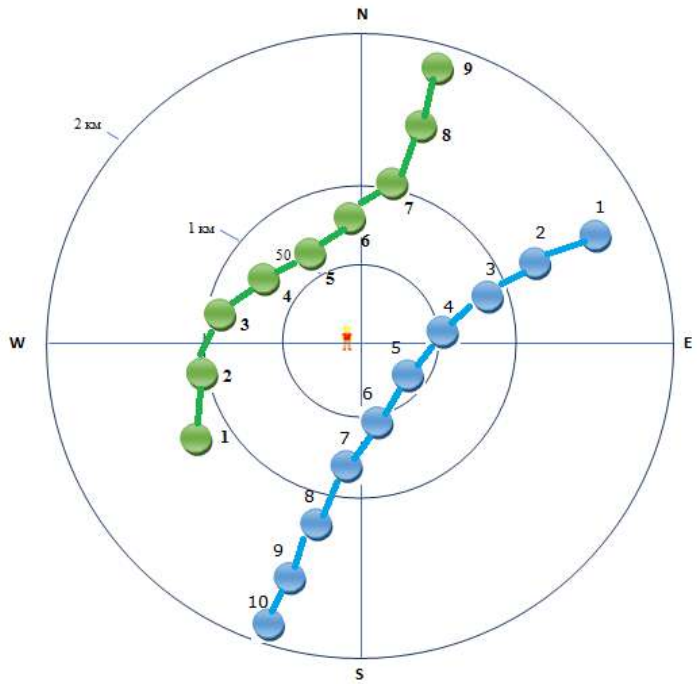


Fig. 73 Flight path (VP 1), 24.02.2021

Table 83 Target species log (VP 1), 24.02.2021

	Haliaeetus albicilla	**10:09**	1 100m	2 100m	3 100m	4 105m	5 105m	6 100m	7 105m	8 105m	9 105m	10 110m
	Buteo buteo	**11:29**	1 30m	2 30m	3 40m	4 45m	5 45m	6 40m	7 35m	8 35m	9 35m	

VP. 2

Date: 24.02.2021. Start and end time: 13:02 – 16:11

Weather:

The air temperature: start 3°C end 1°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

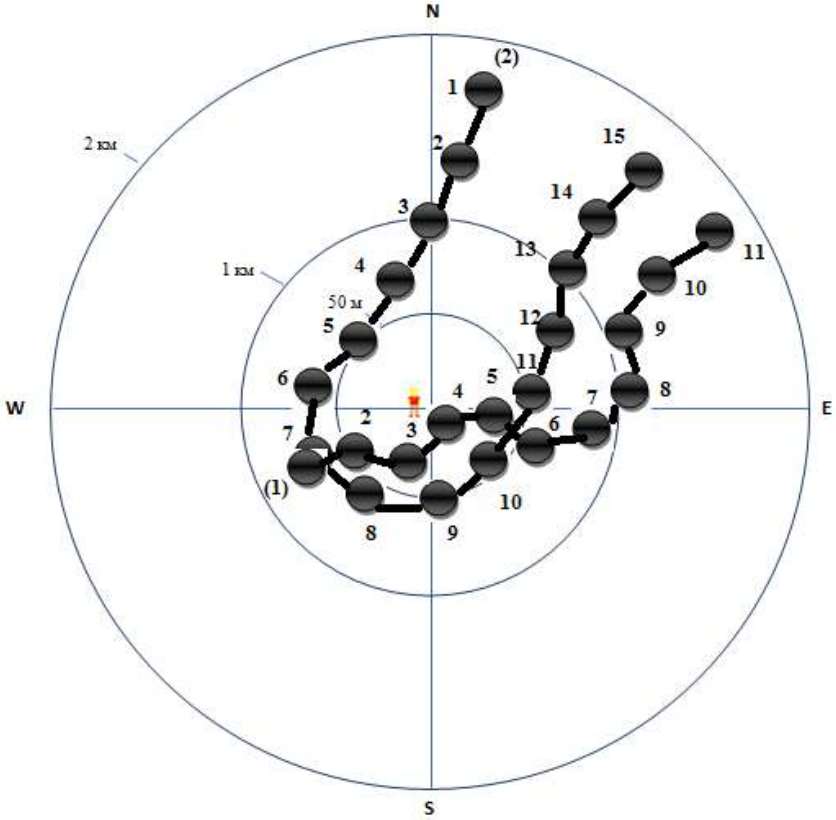


Fig. 74 Flight path (VP 2), 24.02.2021

Table 84 Target species log (VP 2), 24.02.2021

	Aqula chrysaetos (1) (is sitting)	**13:49**	1 0m	2 10m	3 30m	4 45m	5 55m	6 60m	7 65m	8 65m	9 65m	10 60m	11 60m				
	Aqula chrysaetos (2)	**13:52**	1 95m	2 90m	3 90m	4 95m	5 75m	6 60m	7 35m	8 30m	9 35m	10 50m	11 60m	12 65m	13 120m	14 160m	15 165m

VP. 4

Date: 26.02.2021. Start and end time: 9:02 – 12:10

Weather:

The air temperature: start -1°C end 2°C sky half cloudy

Wind speed approx. (5-6 m/s) No precipitation

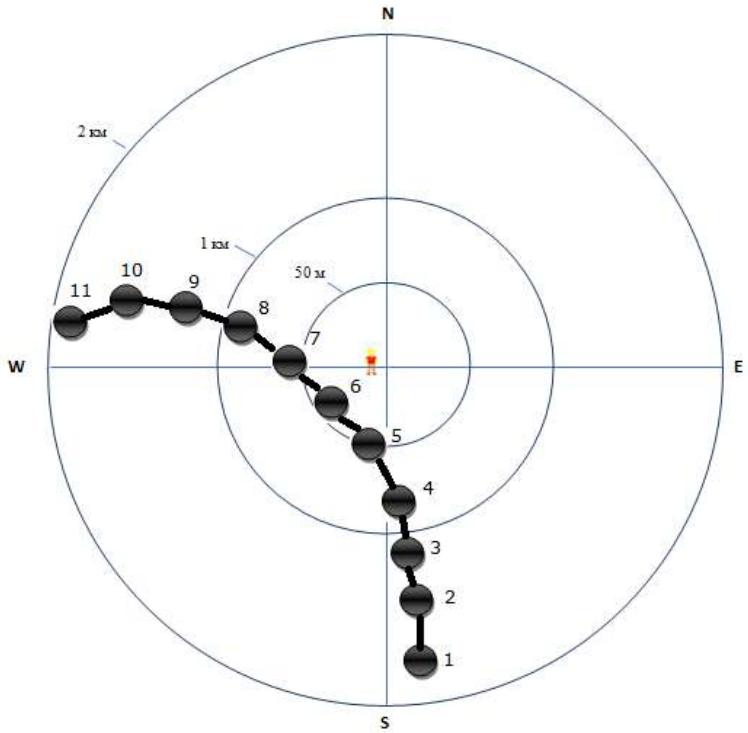


Fig. 75 Flight path (VP 4), 26.02.2021

Table 85 Target species log (VP 4), 26.02.2021

	Aquila chrysaetos	**11:39**	1 200m	2 200m	3 200m	4 205m	5 205m	6 200m	7 205m	8 205m	9 205m	10 210m	11 210m

VP. 3

Date: 26.02.2021. Start and end time: 13:02 – 16:11
Weather:
The air temperature: start 2°C end 1°C sky half cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP. 7

Date: 27.02.2021. Start and end time: 9:02 – 12:11
Weather:
The air temperature: start -1°C end 2°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 10

Date: 27.02.2021. Start and end time: 13:32 – 16:32
Weather:
The air temperature: start 2°C end -1°C sky half cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP. 5

Date: 28.02.2021. Start and end time: 9:09 – 12:10
Weather:
The air temperature: start -1°C end 1°C sky half cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP. 6

Date: 28.02.2021. Start and end time: 13:02 – 16:11

Weather:

The air temperature: start 3°C end 1°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

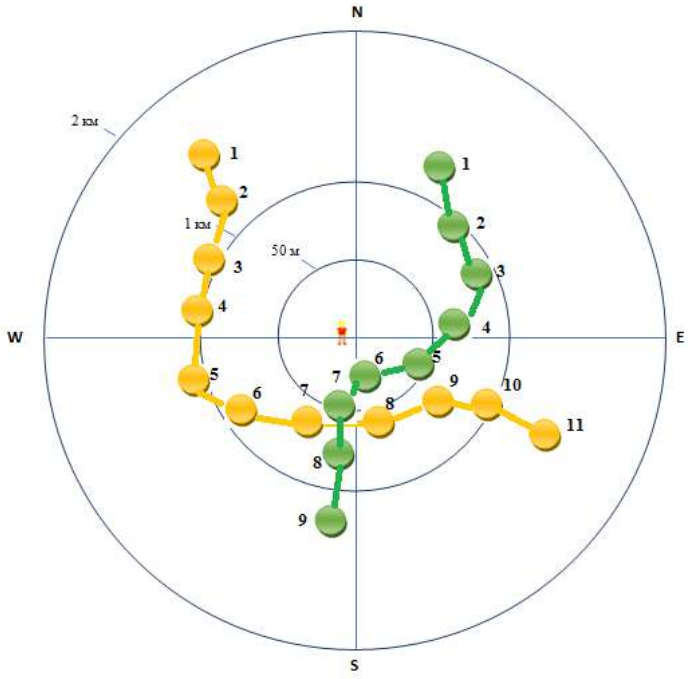


Fig. 76 Flight path (VP 6), 28.02.2021

Table 86 Target species log (VP 6), 28.02.2021

	Falco cherrug	**15:09**	1 20m	2 20m	3 20m	4 15m	5 15m	6 10m	7 15m	8 15m	9 15m	10 20m	11 20m
	Falco tinnunculus	**15:18**	1 10m	2 20m	3 20m	4 15m	5 15m	6 20m	7 20m	8 20m	9 20m		

VP survey results in March

VP. 1

Date: 01.03.2021. Start and end time: 9:17 –12:17
Weather:
The air temperature: start 5°C end 12°C is sunny,
Wind speed approx. (4-6 m/s) No precipitation

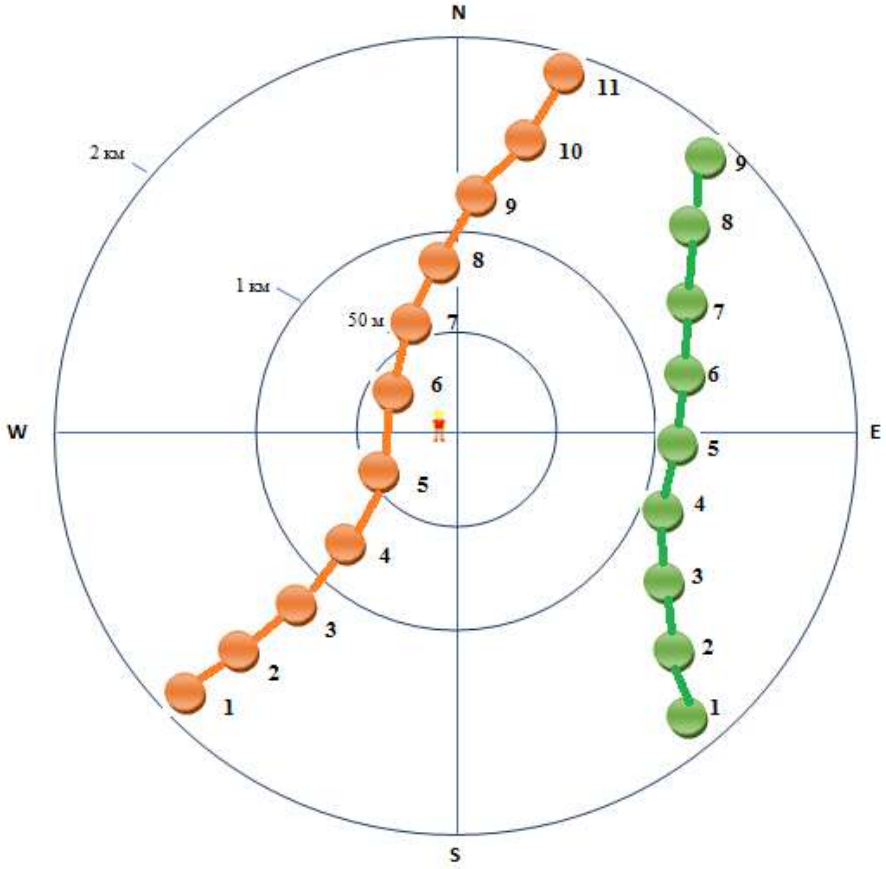


Fig. 77 Flight path (VP 1), 01.03.2021

Table 87 Target species log (VP 1), 01.03.2021

	Haliaeetus albicilla	**9:32**	1 130m	2 130m	3 130m	4 125m	5 125m	6 120m	7 120m	8 120m	9 120m	10 130m	11 130m
	Falco tinnunculus	**11:23**	1 10m	2 10m	3 10m	4 25m	5 25m	6 20m	7 20m	8 10m	9 10m		

VP. 2

Date: 01.03.2021. Start and end time: 13:23 – 16:25

Weather:

The air temperature: start 14°C end 9°C is sunny,
Wind speed approx. (4-5 m/s) No precipitation

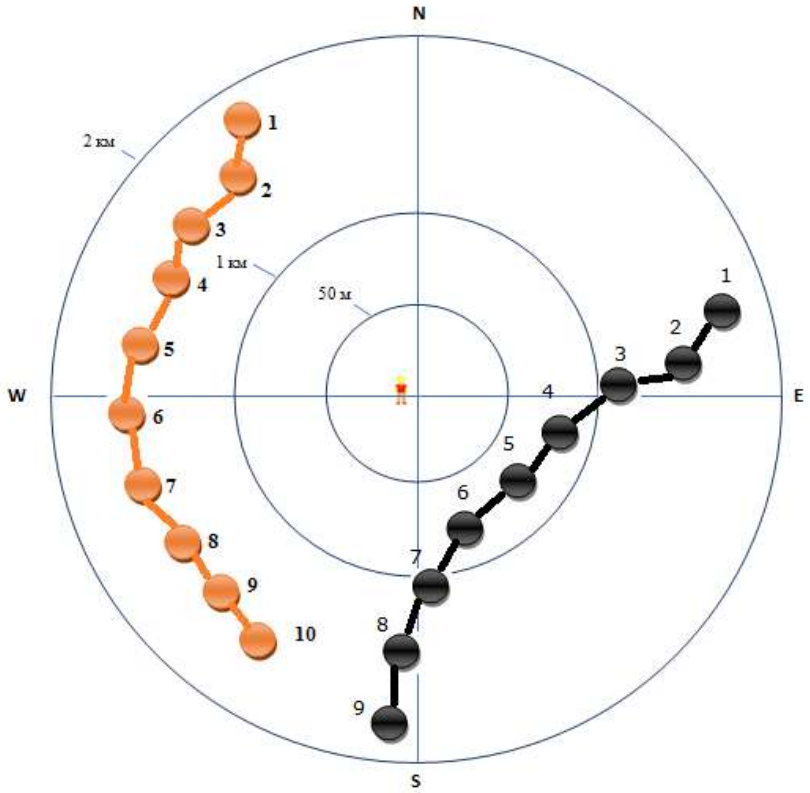


Fig. 78 Flight path (VP 2), 01.03.2021

Table 88 Target species log (VP 2), 01.03.2021

	Aquila chrysaetos	**13:41**	1 130m	2 130m	3 130m	4 125m	5 125m	6 120m	7 120m	8 120m	9 120m	
	Buteo rufinus	**13:41**	1 60m	2 60m	3 70m	4 65m	5 65m	6 60m	7 60m	8 60m	9 60m	10 60m

VP. 3

Date: 02.03.2021. Start and end time: 9:19 – 12:19
Weather:
The air temperature: start 3°C end 6°C sky half cloudy
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP.4

Date: 02.03.2021. Start and end time: 12:58 – 16:06

Weather:

The air temperature: start 7°C end 4°C sky half cloudy

Wind speed approx. (4-6 m/s) No precipitation

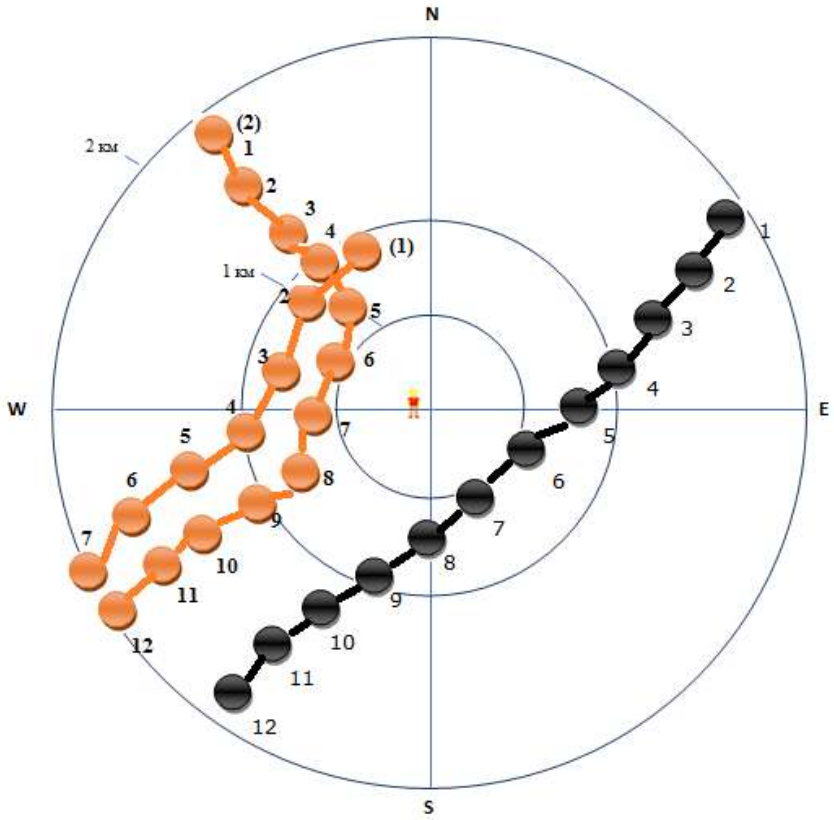


Fig. 79 Flight path (VP 4), 02.03.2021

Table 89 Target species log (VP 4), 02.03.2021

	Buteo rufinus (1) (is sitting)	**13:11**	1 0m	2 15m	3 20m	3 50m	4 65m	5 55m	6 55m	7 55m					
	Buteo rufinus (2)	**13:13**	1 15m	2 15m	3 20m	3 20m	4 25m	5 15m	6 15m	7 5m	8 5m	9 65m	10 65m	11 60m	12 60m
	Aqula chrysaetos	**15:23**	1 120m	2 125m	3 120m	3 120m	4 125m	5 125m	6 125m	7 125m	8 125m	9 135m	10 135m	11 130m	12 130m

VP.5

Date: 03.03.2021. Start and end time: 9:18 – 12:18
Weather:
The air temperature: start 1°C end 6°C sky half cloudy
Wind speed approx. (4-6 m/s) No precipitation

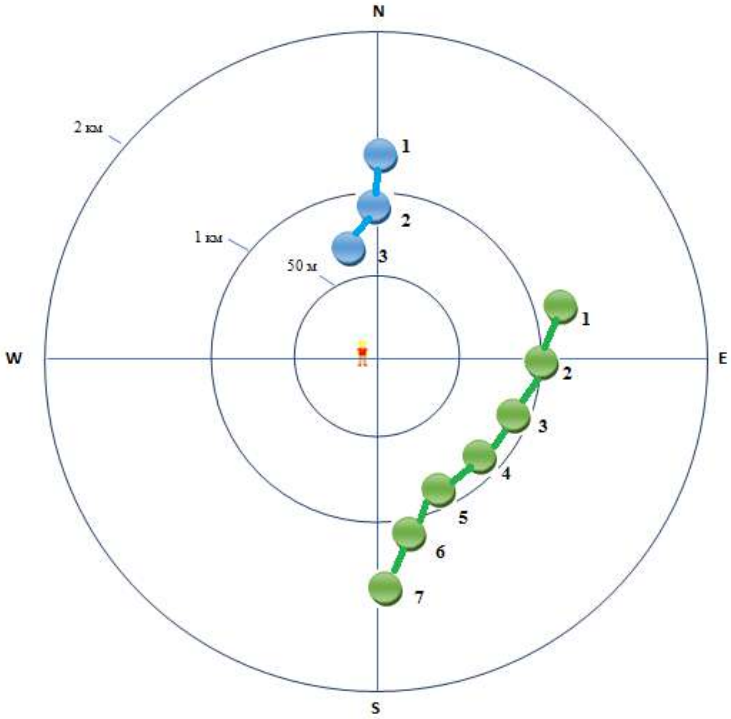


Fig. 80 Flight path (VP 5), 03.03.2021

Table 90 Target species log (VP 5), 03.03.2021

	Athene noctua (is sitting)	**9:20**	1 0m	2 5m	3 0m				
	Falco tinnunculus	**11:10**	1 15m	2 15m	3 10m	4 15m	5 15m	6 15m	7 15m

VP.6

Date: 03.03.2021. Start and end time: 13:28 – 16:29
Weather:
The air temperature: start 6°C end 2°C sky half cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.7

Date: 04.03.2021. Start and end time: 9:28 – 12:29

Weather:

The air temperature: start 3°C end 12°C is sunny

Wind speed approx. (4-6 m/s) No precipitation

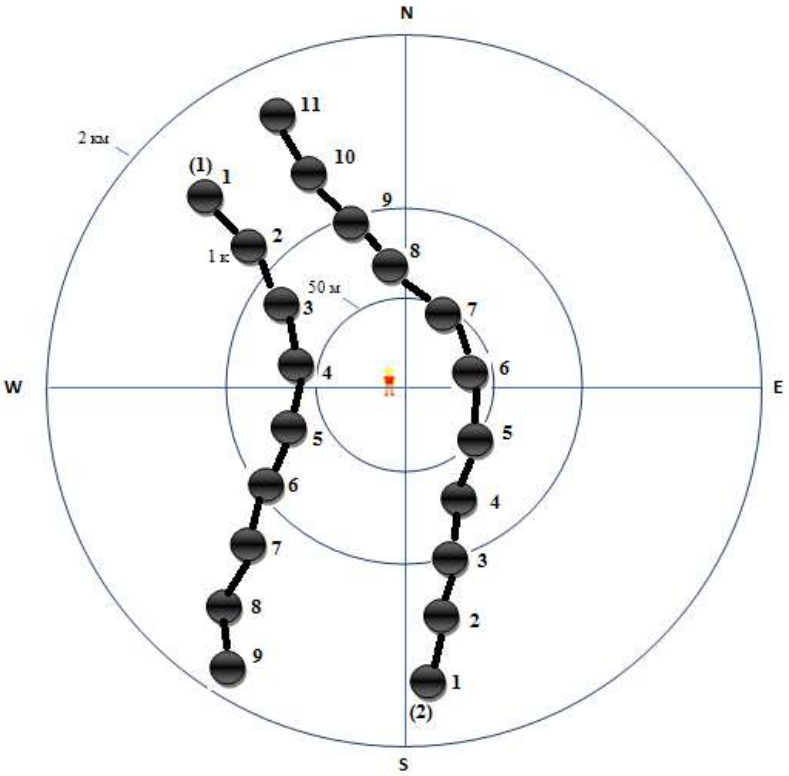


Fig. 81 Flight path (VP 7), 04.03.2021

Table 91 Target species log (VP 7), 04.03.2021

	Aqula chrysaetos (1)	**11:42**	1 125m	2 125m	3 120m	4 125m	5 125m	6 95m	7 95m	8 95m	9 125m		
	Aqula chrysaetos (2)	**12:26**	1 165m	2 165m	3 160m	4 165m	5 165m	6 165m	7 165m	8 165m	9 165m	10 165m	11 165m

VP. 10

Date: 04.03.2021. Start and end time: 13:49 – 16:53

Weather

The air temperature: start 13°C end 5°C half cloudy,
Wind speed approx. (4-5 m/s) No precipitation

Primary species not found

VP.8

Date: 05.03.2021. Start and end time: 9:15 – 12:15
Weather:
The air temperature: start 1°C end 6°C half cloudy,
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.9

Date: 05.03.2021. Start and end time: 13:23 – 16:29

Weather:

The air temperature: start 7°C end 4°C half cloudy,
Wind speed approx. (5-7 m/s) No precipitation

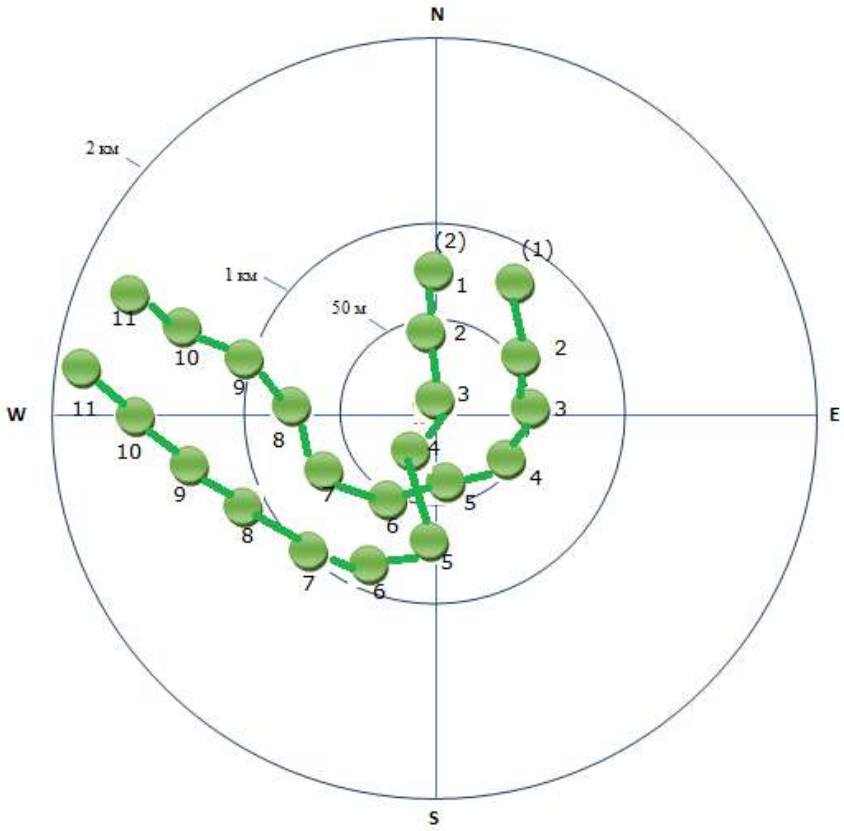


Fig. 82 Flight path (VP 9), 05.03.2021

Table 92 Target species log (VP 9), 05.03.2021

	Gyps fulvus (1)	**15:25**	1 160m	2 130m	3 140m	4 95m	5 95m	6 95m	7 130m	8 135m	9 135m	10 155m	11 30m
	Gyps fulvus (2)	**15:26**	1 160m	2 130m	3 140m	4 95m	5 95m	6 95m	7 130m	8 135m	9 135m	10 30m	11 30m

VP.11

Date: 06.03.2021. Start and end time: 9:09 – 12:11
Weather:
The air temperature: start 2°C end 5°C half cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date: 06.03.2021. Start and end time: 12:52 – 15:52
Weather:
The air temperature: start 5°C end 2°C half cloudy,
Wind speed approx. (5-7 m/s) No precipitation

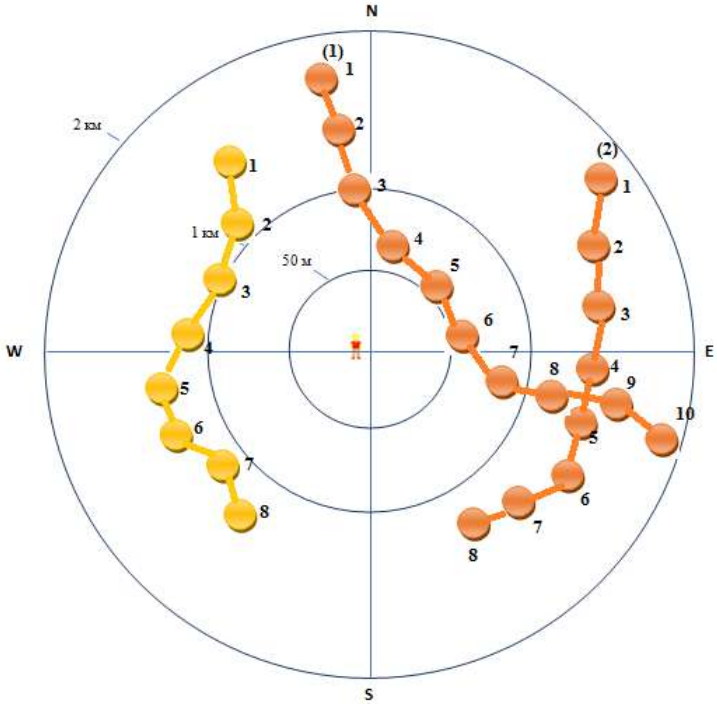


Fig. 83 Flight path (VP 12), 06.03.2021

Table 93 Target species log (VP 12), 06.03.2021

	Buteo rufinus (1)	**13:32**	1 50m	2 50m	3 40m	4 25m	5 35m	6 35m	7 30m	8 35m	9 30m	10 35m
	Buteo rufinus (2)	**14:56**	1 20m	2 50m	3 20m	4 15m	5 35m	6 35m	7 30m	8 35m		
	Falco cherrug	**15:16**	1 20m	2 10m	3 20m	4 15m	5 15m	6 25m	7 20m	8 25m		

VP. 13

Date: 07.03.2021. Start and end time: 9:23–12:25
Weather:
The air temperature: start 3°C end 10°C sky half cloudy,
Wind speed approx. (5-6 m/s) No precipitation

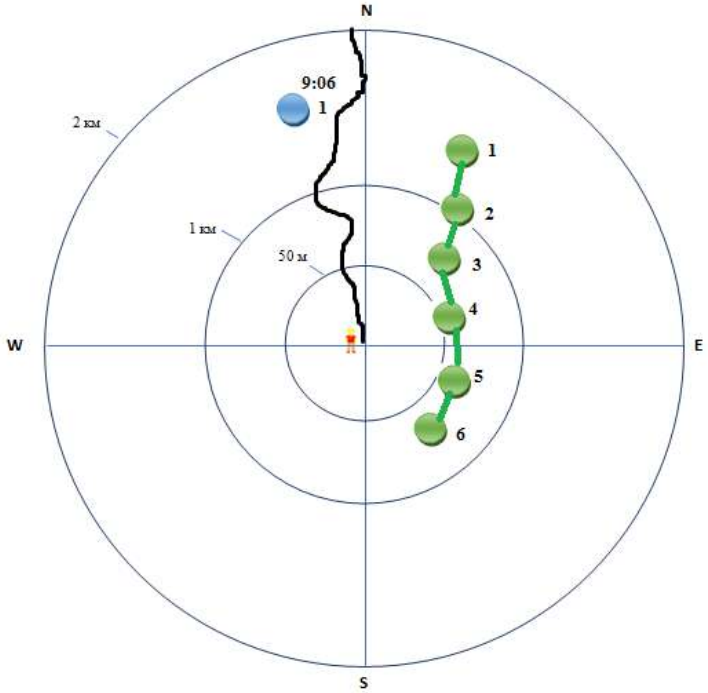


Fig. 84 Flight path (VP 13), 07.03.2021

Table 94 Target species log (VP 13), 07.03.2021

	Athene noctua (is sitting)	**9:06**	1 0m					
	Falco tinnunculus	**11:09**	1 10m	2 10m	3 10m	4 10m	5 15m	6 10m

VP.14

Date: 07.03.2021. Start and end time: 13:16 – 16:15
Weather:
The air temperature: start 10°C end 5°C sky half cloudy,
Wind speed approx. (5-6 m/s) No precipitation

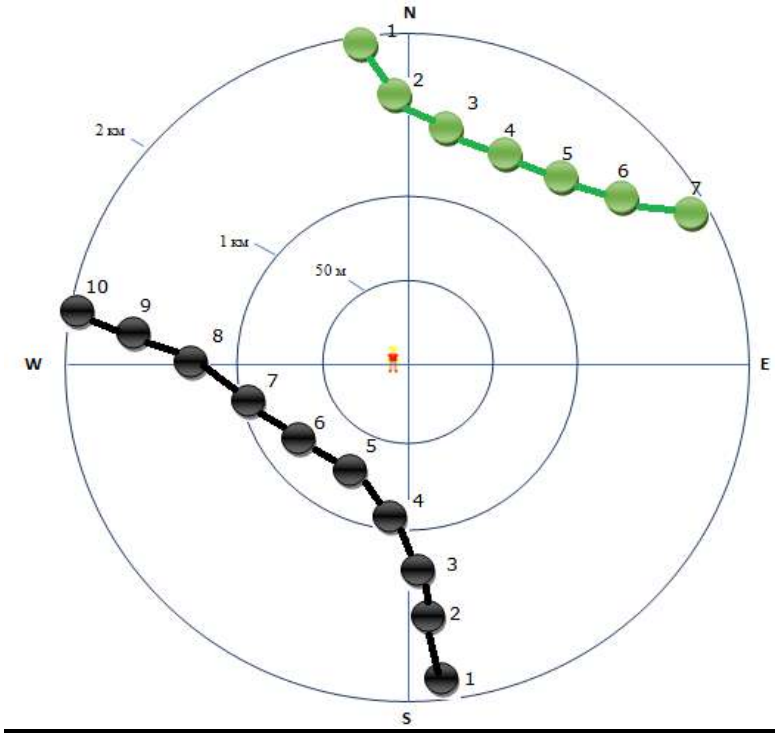


Fig. 85 Flight path (VP 14), 07.03.2021

Table 95 Target species log (VP 14), 07.03.2021

	Falco tinnunculus	**13:52**	1 20m	2 25m	3 25m	4 30m	5 30m	6 35m	7 35m			
	Aquila chrysaetos	**15:56**	1 120m	2 125m	3 125m	4 100m	5 100m	6 115m	7 115m	8 110m	9 110m	10 110m

VP. 8

Date: 08.03.2021. Start and end time: 9:06 – 12:10
Weather:
The air temperature: start 6°C end 15°C is sunny.
Wind speed approx. (5-6 m/s) No precipitation

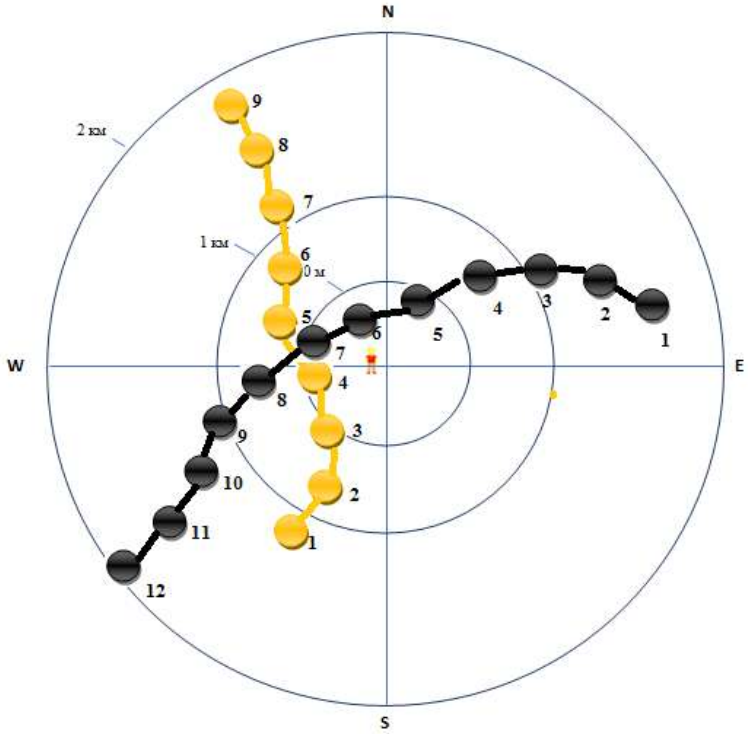


Fig. 86 Flight path (VP 8), 08.03.2021

Table 96 Target species log (VP 8), 08.03.2021

	Buteo buteo	**10:02**	1 30m	2 30m	3 30m	4 30m	5 25m	6 20m	7 15m	8 20m	9 25m			
	Aquila chrysaetos	**11:09**	1 120m	2 150m	3 150m	4 60m	5 75m	6 70m	7 75m	8 70m	9 125m	10 120m	11 125m	12 120m

VP.9

Date: 08.03.2021. Start and end time: 13:15– 16:16
Weather:
The air temperature: start 15°C end 6°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

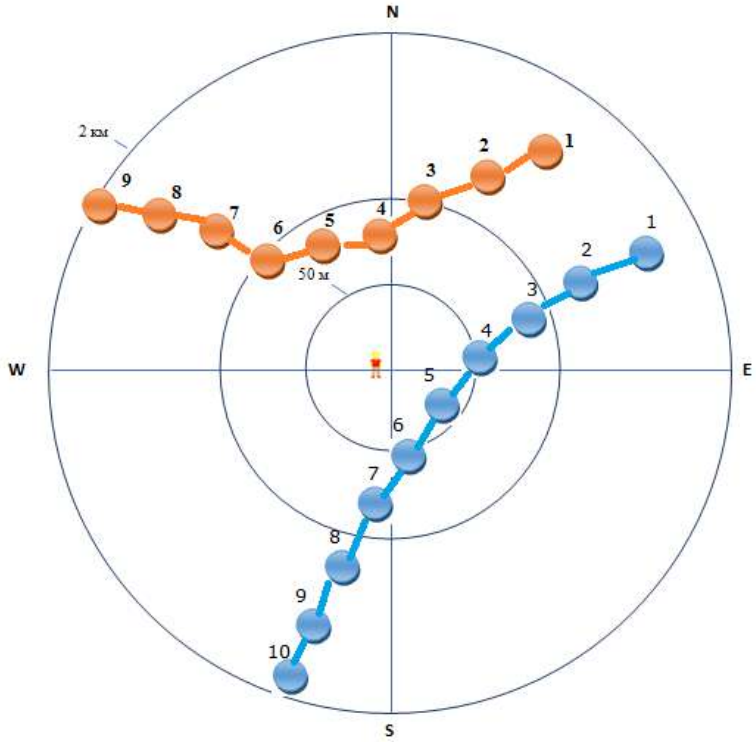


Fig. 87 Flight path (VP 9), 08.03.2021

Table 97 Target species log (VP 9), 08.03.2021

	Buteo rufinus	**10:42**	1 20m	2 15m	3 25m	4 35m	5 35m	6 30m	7 45m	8 45m		
	Aegypius monachus	**11:26**	1 120m	2 120m	3 130m	4 125m	5 125m	6 120m	7 125m	8 125m	9 120m	10 120m

VP.11

Date: 09.03.2021. Start and end time: 9:12– 12:12
Weather:
The air temperature: start 8°C end 16°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.12

Date: 09.03.2021. Start and end time: 13:08 – 16:09
Weather:
The air temperature: start 16°C end 8°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

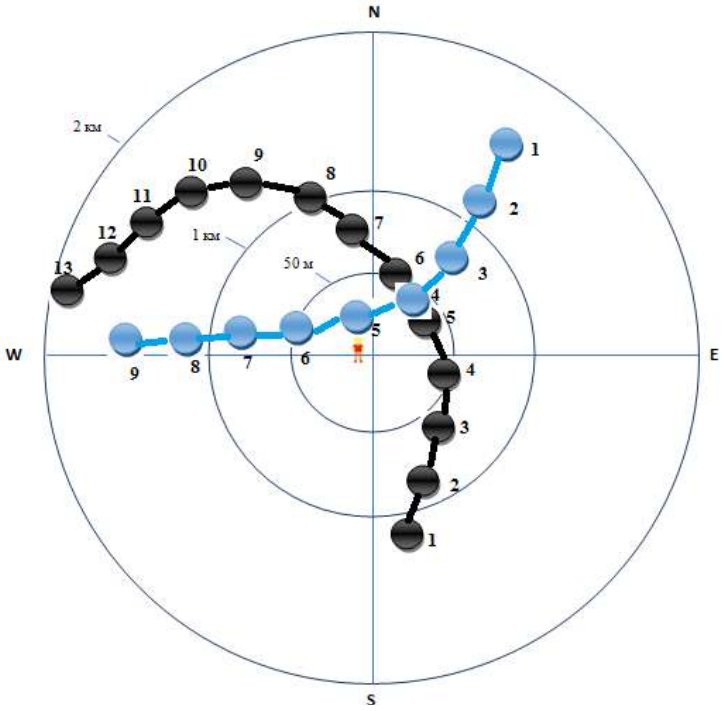


Fig. 88 Flight path (VP 12), 09.03.2021

Table 98 Target species log (VP 12), 09.03.2021

	Aquila chrysaetos	**12:38**	1 160m	2 155m	3 160m	4 165m	5 165m	6 160m	7 165m	8 160m	9 165m	10 160m	11 165m	12 165m	13 160m
	Haliaeetus albicilla	**14:52**	1 130m	2 135m	3 120m	4 125m	5 125m	6 120m	7 125m	8 120m	9 125m				

VP. 13

Date: 10.03.2021. Start and end time: 9:13– 12:14
Weather:
The air temperature: start 4°C end 11°C is sunny
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP 14

Date: 10.03.2021. Start and end time: 13:56 – 16:03
Weather:
The air temperature: start 12°C end 6°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

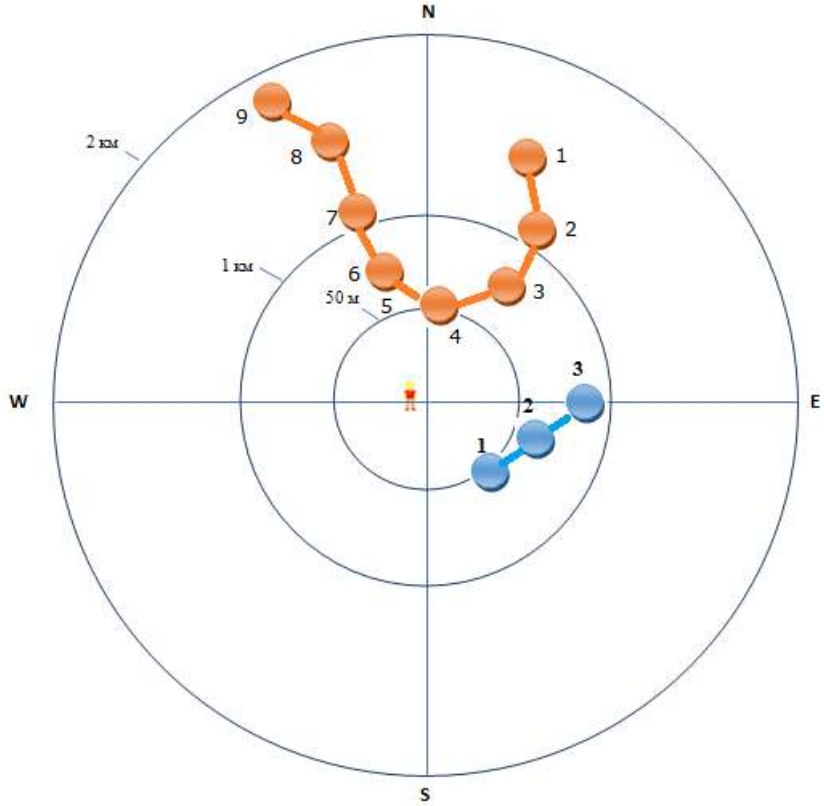


Fig. 89 Flight path (VP 12), 10.03.2021

Table 99 Target species log (VP 12), 10.03.2021

	Athene noctua (is sitting)	**14:28**	1 0m	2 5m	3 0m						
	Falco tinnunculus	**14:49**	1 20m	2 25m	3 20m	4 25m	5 25m	6 20m	7 20m	8 25m	9 20m

ATTACHMENTS

Western part on the project area in January

Aquila chrysaetos - Golden Eagle on the VP 4, 41°35'25.66"C, 64°23'50.69"B

Athene noctua - Little Owl on the VP 10, 41°33'36.01"C, 64°28'24.13"B

Vulpes vulpes – Fox VP4. 41°35'5.55"C, 64°22'58.94"B	*Melanocorypha leucoptera* - White-winged Lark VP 41°36'56.44"C, 64°28'58.94"B

Falco cherrug - Saker Falcon 41°35'56.37"C, 64°27'20.14"B

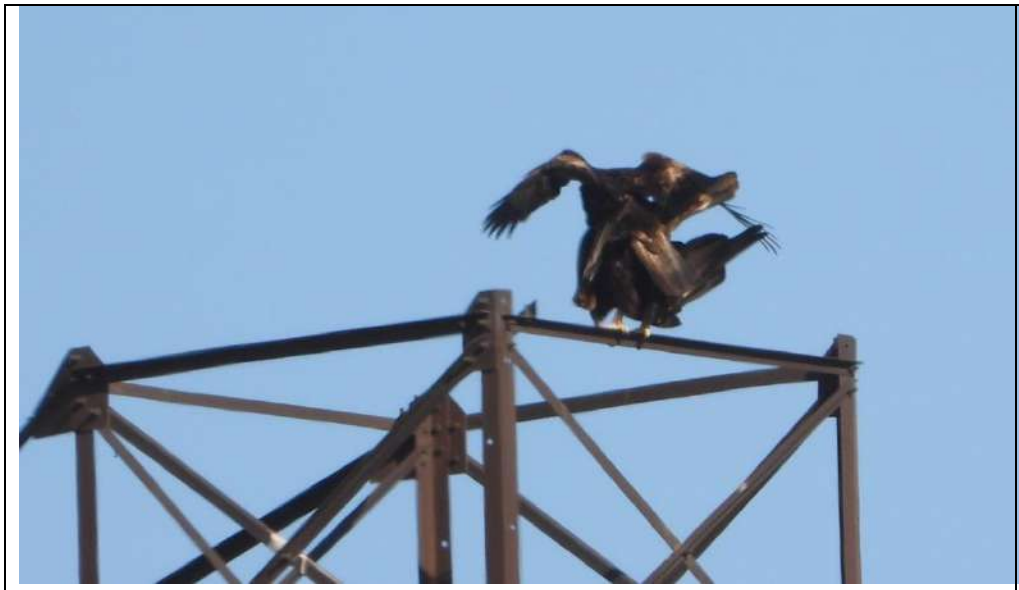
Wind farm territory in January

Zarafshan Wind Farm in February, 2021	
VP 4. 41°35'25.79"C, 64°23'51.31"B	

VP 1. 41°35'52.39"C, 64°19'15.83"B

VP 6. 41°33'41.60"C, 64°25'6.35"B

Aquila chrysaetos - Golden Eagle, 41°35'25.75"C, 64°23'51.69"B

	
Aquila chrysaetos - Golden Eagle, 41°34'51.76"C, 64°21'20.69"B	*Aquila chrysaetos* - Golden Eagle, 41°33'30.03"C, 64°28'51.44"B

Galerida cristata - Crested lark, common species	*Buteo buteo* - Common Buzzard, 41°34'58.68"C, 64°19'5.17"B

Athene noctua - Little Owl, 41°36'26.88"C, 64°22'7.28"B

Falco cherrug - Saker Falcon at 8 VP. 41°33'48.29"C, 64°26'49.07"B	

Buteo rufinus - Long-legged Buzzard 41°35'26.06"C, 64°23'52.76"B

Spermophilus fulvus - Yellow ground squirrel	

Haliaeetus albicilla - White-tailed Sea-eagle, 41°35'46.77"C, 64°24'22.10"B	*Aquila chrysaetos* - Golden Eagle, 41°34'16.84"C, 64°25'21.99"B

Juru Energy

SPRING 2021 QUARTERLY BIRD MONITORING REPORT

ZARAFSHAN WIND FARM PROJECT:

CLIENT: WOOD GROUP

Date: June 2021

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This report is prepared by: Juru Energy Date: _____

CHECKED BY _____ Date: _____

APRROVED BY _____ Date: _____

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INTRODUCTION

The Zarafshan Wind Farm Project is being developed by Wood Group. In the framework of the Zarafshan Wind Farm Project, bird survey was conducted in the project area in Spring 2021 (March 25, 2021– June 10, 2021). The purpose of ornithological monitoring was to conduct systematic field studies at specific vantage points to assess bird species composition that occur within the project's area of influence, its abundance and territorial distribution, the nature of the stay, and daily activity of birds during Spring period and also to identify birds that are of conservation interest under IUCN and Uzbekistan Redlist.

This report is a statement of work made by Juru Enery` local ornitologists Alisher Atakhodjaev and R.A. Sohibnazarov. However, it should be noted that help in collecting survey material was also provided by the company's employees, and expedition members.

SURVEY METHODS

The research methods were based on international best practice recommendations, in particular those set forth in the Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The range of detection and identification of large species as golden eagles was up to 2 km, and small passerines 50 m. Directions and flight altitude were taken into account.

The observations were carried out at 14 Vantage points (Table 2). The number and location of Vantage points for stationary observation in the project area have been agreed with the company employees and international expert. The points are located so as to cover the territory as completely as possible (Fig.1).

The duration of one bird count at each Vantage point (VP) was 3 hours. The total duration of all the observations in the territory was **546 hours** (Table 3).

During observations weather conditions such as wind speed and direction, and air temperature were recorded. Wind speed and air temperature were measured using an anemometer. Whenever possible, the number of species, approximate flight altitude, speed, and flight direction of each target species were recorded every 15 seconds.

During the observations, photographing and short video shooting of birds were carried out, which is used to confirm the correct determination of species and obtain additional data on the number of individuals. Following equipment was used: binoculars (Viking) with 10x zoom; cameras (Nikon P1000, Canon 550D) with 24x and 50x zoom, with focal length of 550 mm and 1200 mm, respectively; field telescope (Viking).

Target and Secondary Species

Target species (shown below) represent the species of greatest sensitivity and/or conservation concern. Those species are the focus of the VP surveys and observations of target species will always take priority over completion of secondary species activity summaries.

List of Bird Families that include Target Species

- Anseriformes – Swans, Geese and Ducks
- Otidiformes – Bustards
- Gruidae – Cranes
- Rallidae – Crakes and Rails

- Phalacrocoracidae - Cormorants
- Pelecanidae – Pelicans
- Ardeidae – Herons, Egrets and Bitterns
- Threskiornithidae – Ibis and Spoonbill
- Ciconiidae – Storks
- Charadriiformes – Waders
- Accipitriformes – Osprey, Eagles, Vultures, Hawks, Buzzards etc.
- Falconidae – Falcons
- Strigiformes - Owls

The Target Species list is based upon current knowledge and is not exhaustive and will be added to as appropriate as further species information is gathered on site and presence of species of particular conservation interest and/or risk from wind farm developments is noted.

In addition to undertaking VP surveys for target species, all other species will be noted on the back of survey forms. Information will include species, number of birds recorded, activity and approximate location in relation to the project area.

List of Bird Families that include Secondary Species

- Laridae – Gulls and Terns
- Strisores – Nightjars and Swifts
- Coraciiformes – Bee-eaters and Rollers
- Sturnidae - Starlings
- Alaudidae – Larks
- Hirundinidae – Swallows and Martins

TERRITORY DESCRIPTION

The territory intended for the construction of the Zarafshan wind farm is located in the South-Western part of Uzbekistan, in the Navoi region, Tamda district (Fig. 1). Aktau Mountains located on the northern side of the project area; Azhyrykty village and Tamdy town are in the North-East.

VANTAGE POINTS

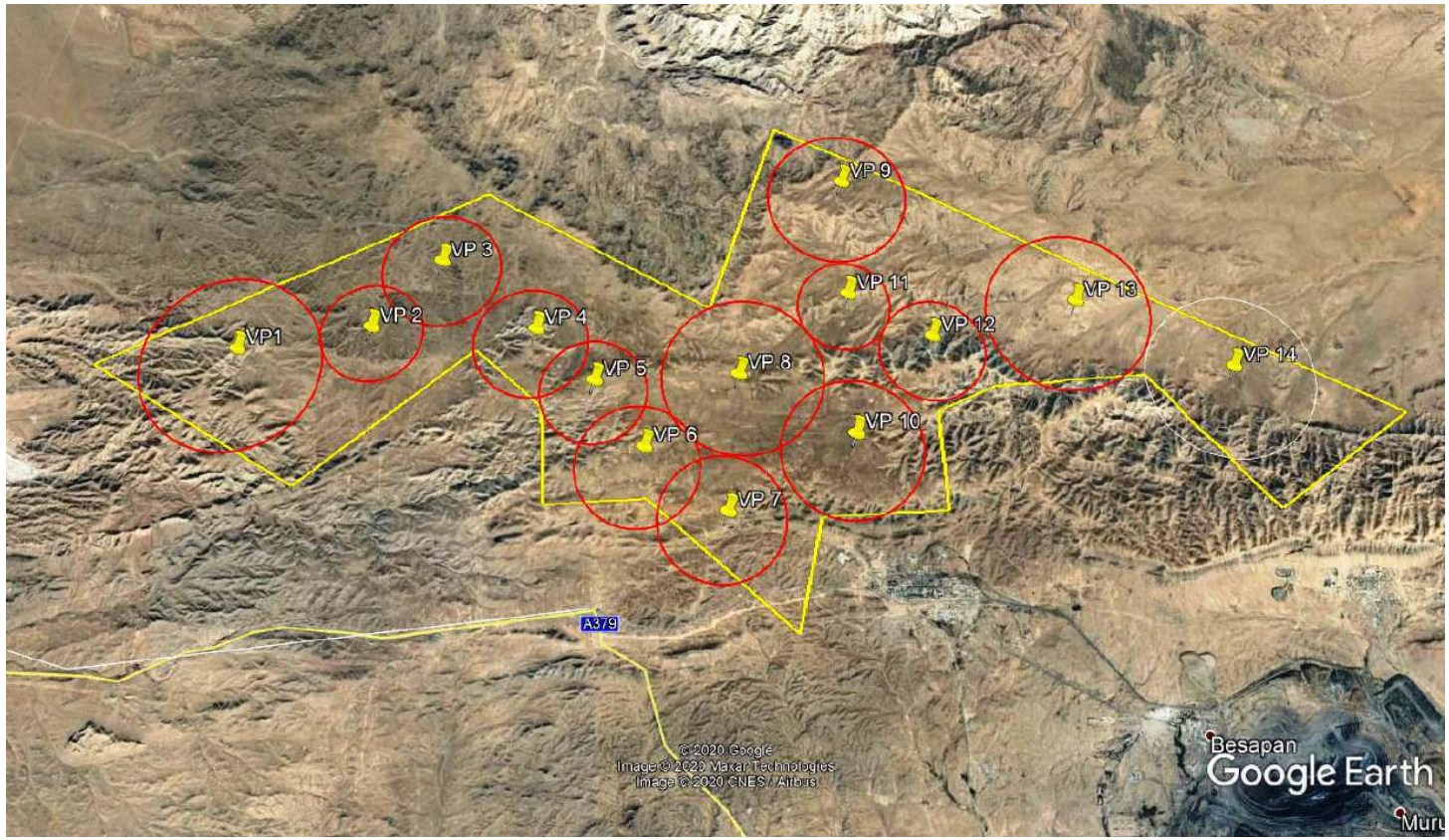


Fig. 1 Vantage Points locations

The number of Vantage Points was agreed with the Client. Points are located so as to cover the project territory as fully as possible. The coordinates of the Vantage Points of Zarafshan are shown in Table 2. The radius of a single observation point is 2 km. Time spent at one point is 3 hours' average.

Table 1 Coordinates of the VPs of Zarafshan project territory

Vantage Points	Coordinates
VP 1	41.582349° 64.319863°
VP 2	41.585587° 64.354108°
VP 3	41.598941° 64.372037°
VP 4	41.583273° 64.396787°
VP 5	41.572261° 64.411438°
VP 6	41.558646° 64.423624°
VP 7	41.545439° 64.443781°
VP 8	41.572008° 64.448397°
VP 9	41.611622° 64.478777°
VP 10	41.559152° 64.476963°
VP 11	41.587621° 64.477994°
VP 12	41.577904° 64.498747°
VP 13	41.584269° 64.537449°
VP 14	41.569329° 64.576066°

Table 2 Total Number of Spring VP survey hours

	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14	Total
March hr	6	6	6	6	6	6	6	6	6	6	6	6	6	6	84
April hr	12	12	12	12	12	12	12	12	12	12	12	12	9	9	162
May hr	18	18	18	18	18	18	18	12	12	18	12	18	15	15	228
June hr	3	3	3	3	3	3	3	9	9	3	9	3	9	9	72
accounts for Spring	36	36	36	36	36	36	36	36	36	36	36	36	36	36	**546**

BIRD OBSERVATIONS RESULTS

Table 3 Results of bird observations in March, 2021

SPECIES			VANTAGE POINTS																
№	Latin name	English name	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14	IUCN status	Uzbekistan Red Book status	Nature of stay
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle															EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle	1						1					1	1	1	LC	2 (VU:R)	R
3.	*Neophron percnopterus*	Egyptian Vulture															EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture															NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon															NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier															NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard	1			1					1						LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard															LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier															LC	-	**MW**
10	*Falco cherrug*	Saker Falcon															EN	1 (EN)	**RW**
11	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**
12	*Falco tinnunculus*	Common Kestrel		1		1								1		1	LC	-	**NMW**
13	*Athene noctua*	Little Owl												1			LC	-	**R**

14	*Haliaeetus albicilla*	White-tailed Sea-eagle															LC	2 (VU:R)	**NMW**
15	*Chlamydotis macqueenii*	Asian Houbara															CR	2 (VU:R)	M
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
16	*Alectoris chukar*	Chuckar partridge	3										4				-	-	**R**
17	*Apus apus*	Northern Swift	5	4													-	-	**NM**
18	*Corvus cornix*	Eurasian Hooded Crow	2	2					3						2	1	-	-	**MW**
19	*Corvus frugilegus*	Eurasian Rook			5			6							3	5	-	-	**RMW**
20	*Pica pica*	Magpie							2								-	-	**R**
21	*Lanius excubitor*	Great (Gray) Shrik								1		1					-	-	**MW**
22	*Oenanthe oenanthe*	Northern Wheatear					2	4									-	-	**NM**
23	*Oenanthe finschii*	Black-necked Wheatear						1	2	1			1		1	1	-	-	**RMW**
24	*Oenanthe isabellina*	Isabelline Wheatear				1	2		2			1		1	3	2	-	-	**BM**
25	*Columba livia*	Rock Dove															-	-	**R**
26	*Galerida cristata*	Crested Lark		2	4	3	3	2	2	4	1	3	2	2	3	2	-	-	**R**
27	*Calandrella rufescens*	Lesser Short-toed Lark		3	7	4	2	3	5	3	4	4	6	12	2	4	-	-	**NMW**
28	*Melanocorypha calandra*	Calandra Lark															-	-	**NMW**
29	*Melanocorypha*	White-winged Lark															-	-	**MW**

	leucoptera																		
30	*Sitta tephronota*	Greater Rock Nuthatch															-	-	**R**
31	*Turdus atrogularis*	Black-throated Thrush			2												-	-	**MW**
32	*Rhodospiza obsoleta*	Black-billed Desert Finch			15	2	4	4			2				5	8	-	-	**R**
33	*Scotocerca inguieta*	Streaked Scrub Warbler			2	1						1					-	-	**R**
34	*Fringilla coelebs*	Chaffinch			2	1	6					11		2	3		-	-	**MW**
35	*Fringilla montifringilla*	Brambling						4							3		-	-	**MW**
36	*Upupa epops*	Hoopoe												1			-	-	**NMW**
37	*Phoenicurus ochruros*	Black Redstart			2												-	-	**NM**
38	*Passer indicus*	Indian House Sparrow								10				18			-	-	**NM**
39	*Motacilla personata*	Pied Wagtail							2								-	-	**RMW**

Note:
R - (residens) settled, W - (wintering) wintering, M - (migrant) migratory, N - nesting species, S - Summer visitor

Table 4 Results of bird observations in April, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle						1					1				EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle		3					2	1	1					1	LC	2 (VU:R)	**R**
3.	*Neophron percnopterus*	Egyptian Vulture						2					1				EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture			1							1					NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon	2								1		1				NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier															NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard				4	3							1		1	LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard														1	LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier										1	1				LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon				1	1										EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**
12.	*Falco tinnunculus*	Common Kestrel		1		1	1		1	1	1	3					LC	-	**NMW**
13.	*Athene noctua*	Little Owl							1	1	1					1	LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle															LC	2 (VU:R)	**NMW**
15.	*Chlamydotis macqueenii*	Asian Houbara															CR	2 (VU:R)	M

16.	*Anser anser*	Greylag Goose		89													NT	-	NMW
17.	*Anser albifrons*	*White-fronted Goose*		78													LC	-	MW
18.	*Grus grus*	Common (Eurasian) Crane			1												NT	-	MW
19.	*Anthropoides virgo*	*Demoiselle Crane*				13													**M**
20.	*Asio otus*	Long-eared Owl			1												LC	-	NMW
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
21.	*Alectoris chukar*	Chuckar partridge	3		6	3					5	4	4			5	-	-	**R**
22.	*Apus apus*	Northern Swift	12	5	4		6		18	5		3				16	-	-	**NM**
23.	*Corvus cornix*	Eurasian Hooded Crow	1						2							2	-	-	**MW**
24.	*Corvus frugilegus*	Eurasian Rook			3			5		4					4	2	-	-	**RMW**
25.	*Pica pica*	Magpie							2							3	-	-	**R**
26.	*Lanius excubitor*	Great (Gray) Shrik	3		3		2			4		4	2		6		-	-	**MW**
27.	*Oenanthe oenanthe*	Northern Wheatear	12	14	9	16	8	10	11	13	12	13	15	10	9	12	-	-	**NM**
28.	*Oenanthe finschii*	Black-necked Wheatear	5	3	3	5	4	4	2	3	5	8	3	2	4	5	-	-	**RMW**
29.	*Oenanthe isabellina*	Isabelline Wheatear	4	5	7	7	6	4	5	7	9	5	2	4	5	4	-	-	**BM**
30.	*Columba livia*	Rock Dove			4					2						6	-	-	**R**
31.	*Galerida cristata*	Crested Lark	16	22	14	23	25	28	27	26	14	26	18	21	28	20	-	-	**R**

32.	*Calandrella rufescens*	Lesser Short-toed Lark	13	16	21	16	23	27	19	18	23	24	26	22	32	4	-	-	**NMW**
33.	*Melanocorypha calandra*	Calandra Lark															-	-	**NMW**
34.	*Melanocorypha leucoptera*	White-winged Lark															-	-	**MW**
35.	*Sitta tephronota*	Greater Rock Nuthatch								2				2		3	-	-	**R**
36.	*Turdus atrogularis*	Black-throated Thrush	5		2						6						-	-	**MW**
37.	*Rhodospiza obsoleta*	Black-billed Desert Finch			15	12	14	4			12				15	8	-	-	**R**
38.	*Scotocerca inguieta*	Streaked Scrub Warbler	2		2	1	6					3		4		2	-	-	**R**
39.	*Fringilla coelebs*	Chaffinch	3		6	4	6			12		11		12	3	6	-	-	**MW**
40.	*Fringilla montifringilla*	Brambling	4		5			4				5			3		-	-	**MW**
41.	*Upupa epops*	Hoopoe	2			4	3							4		4	-	-	**NMW**
42.	*Phoenicurus ochruros*	Black Redstart			2						2			2	2		-	-	**NM**
43.	*Passer indicus*	Indian House Sparrow		12		18		16		10		20		18		14	-	-	**NM**
44.	*Motacilla personata*	Pied Wagtail		2			4		2				2			3	-	-	**RMW**
45.	*Motacilla alba*	White Wagtail	2	2			3							1					
46.	*Merops persicus*	Blue-cheeked Bee-eater	6	5	14		5		6	8		12	9			12			**NM**

47.	*Merops apiaster*	European Bee-eater	6	4			5			4			4		5				**NM**
48.	*Pterocles orientalis*	Black-bellied Sandgrouse	4	4			6			2				4		6			**NMW**
49.	*Hirundo rustica*	Barn Swallow	6	5	4	5	6	6	4	6	4	6	4	5	7	5			**NM**
50.	*Muscicapa striata*	Spotted Flycatcher	2		3		1		1	1	2	1		2		3			**NM**
51.	*Coracias garrulus*	Eurasian Roller	3		4		2	2	1				3		2	3			**NM**
52.	*Scotocerca inquieta*	Streaked Scrub Warbler	1	2		2		2		2	1	1		1					**R**

Table 5 Results of bird observations in May, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle															EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle						1	2			1				5	LC	2 (VU:R)	**R**
3.	*Neophron percnopterus*	Egyptian Vulture				3	1		1			1			1		EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture		2												1	NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon		1						1		2					NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier											1	1			NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard		3	2	5					1						LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard	1			1											LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier								1	1					2	LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon							1		1						EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**
12.	*Falco tinnunculus*	Common Kestrel	1	1		1	1	1	1		1	1	1				LC	-	**NMW**
13.	*Athene noctua*	Little Owl			1	1			1				1	1			LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle															LC	2 (VU:R)	**NMW**
15.	*Chlamydotis macqueenii*	Asian Houbara															CR	2 (VU:R)	M

16.	*Anser anser*	Greylag Goose															NT	-	NMW
17.	*Grus grus*	Common (Eurasian) Crane															NT	-	MW
18.	*Asio otus*	Long-eared Owl			1												LC	-	NMW
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
19.	*Alectoris chukar*	Chuckar partridge	8	4	6	7					5	6		9		6	-	-	**R**
20.	*Apus apus*	Northern Swift	9	4	3		8		5	8	4	9			5	7	-	-	**NM**
21.	*Corvus frugilegus*	Eurasian Rook	1		1		2	2		3			1		1		-	-	**RMW**
22.	*Pica pica*	Magpie	1						3							4	-	-	**R**
23.	*Lanius excubitor*	Great (Gray) Shrik	2	1			3			3		4	5		4	2	-	-	**MW**
24.	*Oenanthe oenanthe*	Northern Wheatear	15	18	12	9	12	18	5	7	15	21	18	9	17	13	-	-	**NM**
25.	*Oenanthe finschii*	Black-necked Wheatear	6	7	8	4	6	4	2	4	5	5	3	3	7	3	-	-	**RMW**
26.	*Oenanthe isabellina*	Isabelline Wheatear	7	12	8	9	14	6	7	8	10	8	9	3	2	9	-	-	**BM**
27.	*Columba livia*	Rock Dove	12		14		5		3	2	3			5		6	-	-	**R**
28.	*Galerida cristata*	Crested Lark	28	24	24	23	23	27	22	29	32	26	28	24	22	29	-	-	**R**
29.	*Calandrella rufescens*	Lesser Short-toed Lark	23	26	24	26	24	25	29	28	21	14	16	28	12	14	-	-	**NMW**
30.	*Melanocorypha calandra*	Calandra Lark															-	-	**NMW**
31.	*Melanocorypha*	White-winged Lark															-	-	**MW**

	leucoptera																		
32.	*Sitta tephronota*	Greater Rock Nuthatch	1			1				1				1		1	-	-	**R**
33.	*Turdus atrogularis*	Black-throated Thrush	4								3					5	-	-	**MW**
34.	*Rhodospiza obsoleta*	Black-billed Desert Finch	14		13	12	8	4	5		12				15	8	-	-	**R**
35.	*Scotocerca inguieta*	Streaked Scrub Warbler	2		3	1	2		1			2	1	2		2	-	-	**R**
36.	*Fringilla coelebs*	Chaffinch	1		2		3	2		8		9		13	2	4	-	-	**MW**
37.	*Fringilla montifringilla*	Brambling	3	2	4			2				3			5	4	-	-	**MW**
38.	*Upupa epops*	Hoopoe	2			2	3				2			2		2	-	-	**NMW**
39.	*Passer indicus*	Indian House Sparrow	8	16		21	12	13		10		20	5	18		22	-	-	**NM**
40.	*Motacilla personata*	Pied Wagtail	1	2			2		2	1			2			4	-	-	**RMW**
41	*Merops persicus*	Blue-cheeked Bee-eater	5	6	18	5	9	3	8	12	5	15	10	3	5	8			**NM**
42.	*Merops apiaster*	European Bee-eater	3	7			5	2	6	4			3		5	3			**NM**
43.	*Pterocles orientalis*	Black-bellied Sandgrouse	5	3		4	6			2	2		2	4		2			**NMW**
44.	*Hirundo rustica*	Barn Swallow	6	5	9	5	12	6	4	10	8	6	4	8	7	9			**NM**
45.	*Muscicapa striata*	Spotted Flycatcher	2	1	3		2	1		1	2	1	1	1		2			**NM**

46.	*Coracias garrulus*	Eurasian Roller	3	2	4	1	2	2	3	2	1		3	3	2	2			**NM**
47.	*Scotocerca inquieta*	Streaked Scrub Warbler	1	2		2		2		2	1	1		1					**R**
48.	*Sylvia curruca*	Lesser Whitethroat		1															**NM**

Table 6 Results of bird observations in June, 2021

SPECIES			VANTAGE POINTS																
№	**Latin name**	**English name**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
TARGET SPECIES																			
1.	*Aquila nipalensis*	Steppe Eagle															EN	2 (VU:D)	**NMW**
2.	*Aquila chrysaetos*	Golden Eagle								2	1						LC	2 (VU:R)	**R**
3.	*Neophron percnopterus*	Egyptian Vulture				1					1	1			1		EN	2 (VU:D)	**NMW**
4.	*Aegypius monachus*	Cinereous Vulture												1	1		NT	3 (NT)	**R**
5.	*Gyps fulvus*	Eurasian Griffon										1			2		NT	2 (VU:D)	**R**
6.	*Gypaetus barbatus*	Lammergeier															NT	2 (VU:R)	**R**
7.	*Buteo rufinus*	Long-legged Buzzard	1			2											LC	-	**NMW**
8.	*Buteo buteo*	Common Buzzard															LC	-	**MW**
9.	*Circus cyaneus*	Hen Harrier									1						LC	-	**MW**
10.	*Falco cherrug*	Saker Falcon												1			EN	1 (EN)	**RW**
11.	*Falco naumanni*	Lesser Kestrel															LC	3 (NT)	**BM**
12.	*Falco tinnunculus*	Common Kestrel	1					1		1	1						LC	-	**NMW**
13.	*Athene noctua*	Little Owl							2	1	2						LC	-	**R**
14.	*Haliaeetus albicilla*	White-tailed Sea-eagle															LC	2 (VU:R)	**NMW**
15.	*Chlamydotis macqueenii*	Asian Houbara															CR	2 (VU:R)	**M**

16.	*Anser anser*	Greylag Goose															NT	-	**NMW**
17.	*Grus grus*	Common (Eurasian) Crane															NT	-	**MW**
18.	*Asio otus*	Long-eared Owl															LC	-	**NMW**
SECONDARY SPECIES																			
№	**Latin**	**English**	**VP 1**	**VP 2**	**VP 3**	**VP 4**	**VP 5**	**VP 6**	**VP 7**	**VP 8**	**VP 9**	**VP 10**	**VP 11**	**VP 12**	**VP 13**	**VP 14**	**IUCN status**	**Uzbekistan Red Book status**	**Nature of stay**
19.	*Alectoris chukar*	Chuckar partridge	3	4							4	6		2		2	-	-	**R**
20.	*Apus apus*	Northern Swift	2	1	2		2		4	2	2	1		1		3	-	-	**NM**
21.	*Corvus frugilegus*	Eurasian Rook	1		1					1			1		1		-	-	**RMW**
22.	*Pica pica*	Magpie	1						2					1			-	-	**R**
23.	*Lanius excubitor*	Great (Gray) Shrik		1			1			1					2	1	-	-	**MW**
24.	*Oenanthe oenanthe*	Northern Wheatear	4	3	4	2	5		5	4	6	3	4		4	5	-	-	**NM**
25.	*Oenanthe finschii*	Black-necked Wheatear	2		2		3	3	2	4		3	2	4	3	1	-	-	**RMW**
26.	*Oenanthe isabellina*	Isabelline Wheatear		2		4	3	3	4	2		2	3	2		2	-	-	**BM**
27.	*Columba livia*	Rock Dove	3	2			2			2	3			2		2	-	-	**R**
28.	*Galerida cristata*	Crested Lark	8	8	6	5	7	5	5	7	10	9	3	4	4	5	-	-	**R**
29.	*Calandrella rufescens*	Lesser Short-toed Lark	10	12	5	6			8	9		6		5	3		-	-	**NMW**
30.	*Sitta tephronota*	Greater Rock Nuthatch	1			1								1			-	-	**R**
31.	*Turdus atrogularis*	Black-throated	2					1			2					5	-	-	**MW**

		Thrush																	
32.	*Rhodospiza obsoleta*	Black-billed Desert Finch	4		2	5		4								2	-	-	**R**
33.	*Scotocerca inguieta*	Streaked Scrub Warbler			2	1			1					2			-	-	**R**
34.	*Upupa epops*	Hoopoe	2											1		1	-	-	**NMW**
35.	*Passer indicus*	Indian House Sparrow		4		4	1	5			2	6	2	7	5	3	-	-	**NM**
36.	*Motacilla personata*	Pied Wagtail	1							1			2			1	-	-	**RMW**
37.	*Merops persicus*	Blue-cheeked Bee-eater	2		5	4			8			6	2	3		8			**NM**
38.	*Merops apiaster*	European Bee-eater	3				5	2	1	2			4		2				**NM**
39.	*Pterocles orientalis*	Black-bellied Sandgrouse	2				6				2		2	4		4			**NMW**
40.	*Hirundo rustica*	Barn Swallow	3			2	2			1			2	1	3	2			**NM**
41.	*Muscicapa striata*	Spotted Flycatcher		1	3			1			2			1		1			**NM**
42.	*Coracias garrulus*	Eurasian Roller	1			1			1		1					2			**NM**
43.	*Scotocerca inquieta*	Streaked Scrub Warbler	1	1							1					1			**R**

RAPTORS' NEST SEARCH

In the spring of 2021, the territory of the Zarafshon wind farm and the nearby Aktau Mountain were examined for the presence of nesting birds of prey. The depressions, niches and cracks on the rocks and the rocks themselves were examined. The methodology of birds of prey nests search consisted in walking transects in places of possible nesting – on rocky areas and cliffs, followed by mapping the nests found (Figures 2-3). During the survey optical devices such as binoculars and telescope were used. The method of interviewing local residents and shepherds about the presence of predator nests was also used. Due to the lack of large trees and shrubs, nesting birds in trees was excluded. Surveys were conducted both in the project area and in the surrounding area.

During the survey, 17 nests of predators were found (Table 7). But, most of the nests remained empty. Out of 17 nests, we found only 2 residential nests of birds of prey. Nest No. 4 belonged to Long-legged Buzzard with 3 eggs, (then with 3 chicks, all of the chicks safely left the nest). The next residential nest belonged to Saker Falcon, Nest No. 9, but due to the inaccessibility of the nesting site, it was not possible to photograph the nest and its contents.

The territory of the Zarafshan wind farm is located in a desert zone, the climate is sharply continental. Large concentrations of birds are not found in such arid regions. Nesting of birds of prey also depends on many factors, such as: the state and success of breeding of forage (rodents, reptiles, etc), on weather conditions, the success wintering and migration, disturbance factors and others. For this reason, it is possible that nesting in the area has an unstable character and vary from year to year. It is known from the literature that many large birds of prey do not breed in the years of the lowest density of rodents - their main food objects. Despite the fact that large birds of prey were regularly seen on the territory during VP sessions, their nestings were not found on the site.

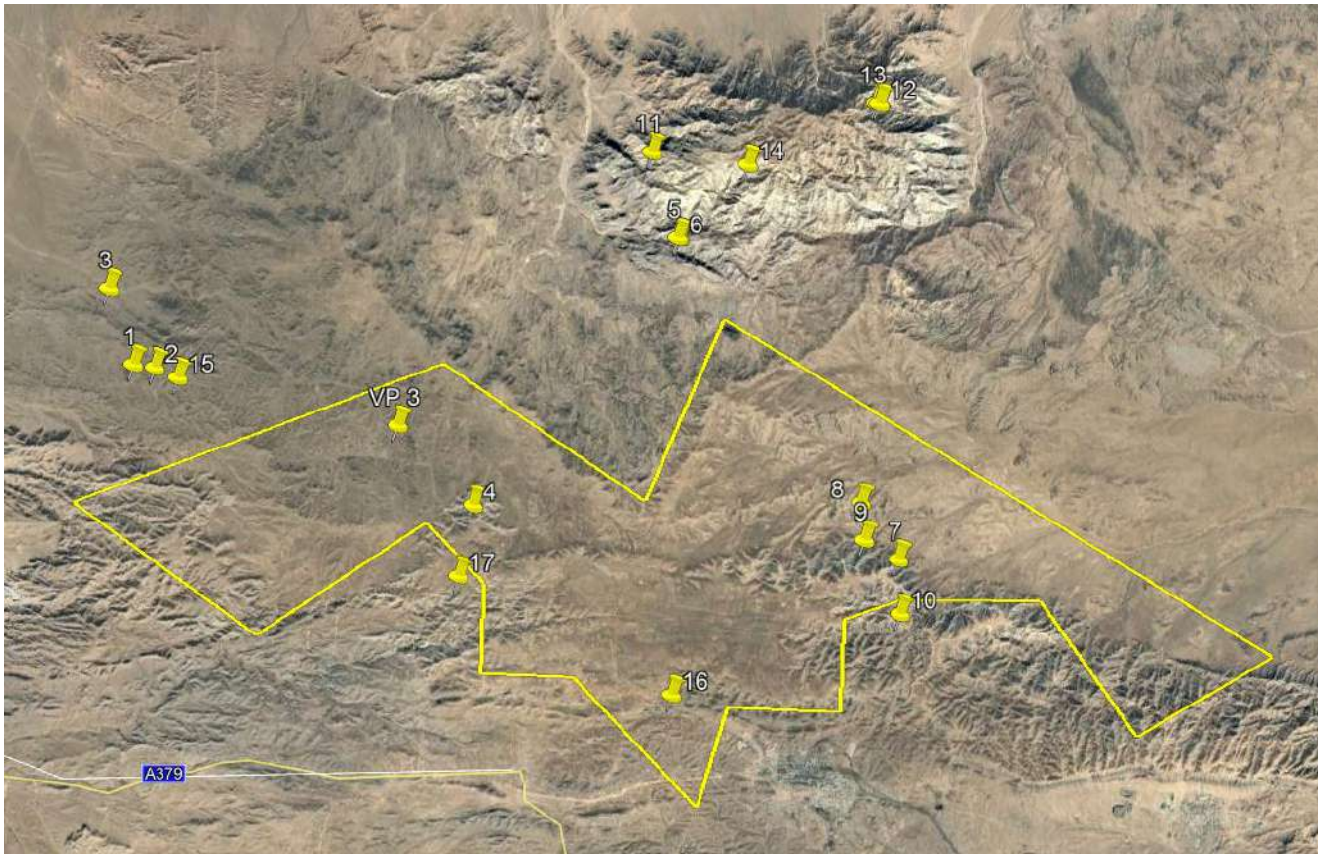


Fig. 2 Map of the locations of predator nests on the territory of the Zarafshan Wind Farm. Spring 2021

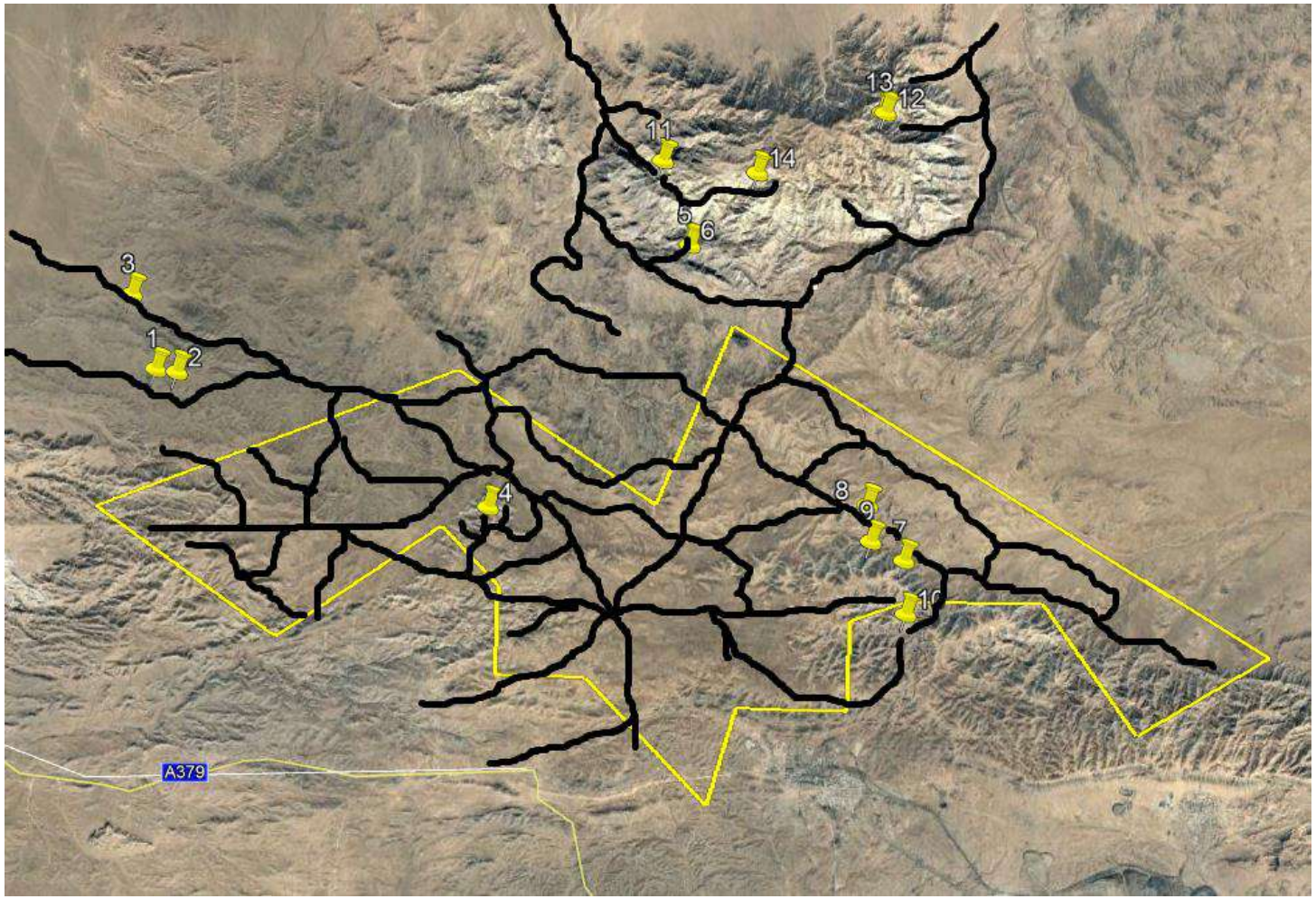


Fig. 3 Map of transects for nests search

Table 7 Raptor nests

Nest №	Coordinates	Description
1.	N 41°36'33.83", E 64°17'51.28"	Large nest, empty
2.	N 41°36'32.19", E 64°18'12.82"	Large nest, empty
3.	N 41°37'30.44", E 64°17'23.35"	Large nest, empty
4.	N 41°34'58.35", E 64°23'38.01"	Residential nest with 3 chicks of Long-legged Buzzard
5.	N 41°38'25.79", E 64°26'52.95"	Empty nest, possibly belonged to Golden Eagle
6.	N 41°38'25.44", E 64°26'54.39"	Empty nest, possibly belonged to Golden Eagle
7.	N 41°34'34.41", E 64°30'41.71"	Large nest, empty
8.	N 41°35'11.69", E 64°30'7.26"	Empty nest
9.	N 41°34'43.84", E 64°30'12.12"	Empty nest, possibly belonged to Saker Falcon (according to local ornithologists)
10.	N 41°33'50.40", E 64°30'59.40"	Empty nest, possibly belonged to Kestrel (Kestrel nested here last year)
11.	N 41°39'29.48", E 64°26'23.18"	Empty nest, possibly belonged to Saker Falcon (according to local ornithologists)
12.	N 41°40'12.87", E 64°30'9.86"	6 Large nests, possibly belonged to Griffon Vulture - *Gyps fulvus*
13.	N 41°40'13.18", E 64°30'6.86"	
14.	N 41°39'23.04", E 64°28'0.43"	Empty nest
15.	N 41°36'25.39", E 64°18'36.31"	Empty nest, not large
16.	N 41°32'41.53", E 64°27'4.90"	Old empty nest
17.	N 41°34'4.58", E 64°23'26.18"	Empty nest

This year in the Spring on the territory of Uzbekistan, maybe throughout Central Asia, the weather was very unstable. In early February, the temperature rose to 20°C and many animals woke up from hibernation early. In mid-March there were a few days of cold weather with frosts, followed by snow and rain throughout the desert zone of Uzbekistan. Cattle farmers and shepherds suffered great losses – many newborn lambs and even adult animals died - first from the sharp cold, and then from lack of food. The desert's already sparse vegetation, mostly ephemeral plants, has barely appeared this year. All this was reflected in the activity of birds of prey and their nesting. Only two nest were found – the nest belonged to Buteo rufinus (Long-legged Buzzard) with three eggs, from which 3 chicks later hatched and the second nest belonged to Saker Falcon. Nesting of other large predators in this area has not been observed this year.

Nest № 1. N 41°36'33.83", E 64°17'51.28" Large nest, empty	Nest № 2. N 41°36'32.19", E 64°18'12.82" Large nest, empty	Nest № 5. N 41°38'25.79", E 64°26'52.95" Empty nest, possibly belonged to Golden Eagle

Searching for nests

Nest № 7. N 41°34'34.41", E 64°30'41.71" large nest, empty

Nest № 4. N 41°34'58.35", E 64°23'38.01" residential nest with 3 chicks of Long-legged Buzzard

Nest № 6. N 41°38'25.44", E 64°26'54.39" Empty nest, possibly belonged to Golden Eagle	Nest № 15. N 41°36'25.39", E 64°18'36.31" empty nest, not large	Nest № 8. N 41°35'11.69", E 64°30'7.26" empty nest
Nest № 16. N 41°32'41.53", E 64°27'4.90" old empty nest	Nest № 17. N 41°34'4.58", E 64°23'26.18" empty nest	

BIRD MORTALITY ON POWER LINES (OHTLs)

The power line stretching along the territory of the planned Zarafshon wind farm from the Muruntau mine to the border of the wind farm, with a total length of 15 km, has been studied twice during the spring season. When the remains of birds were found under the OHTLs, the species was determined, and the dead birds were photographed and the coordinares were taken. The transects were driven at a low speed and walked where necessary.

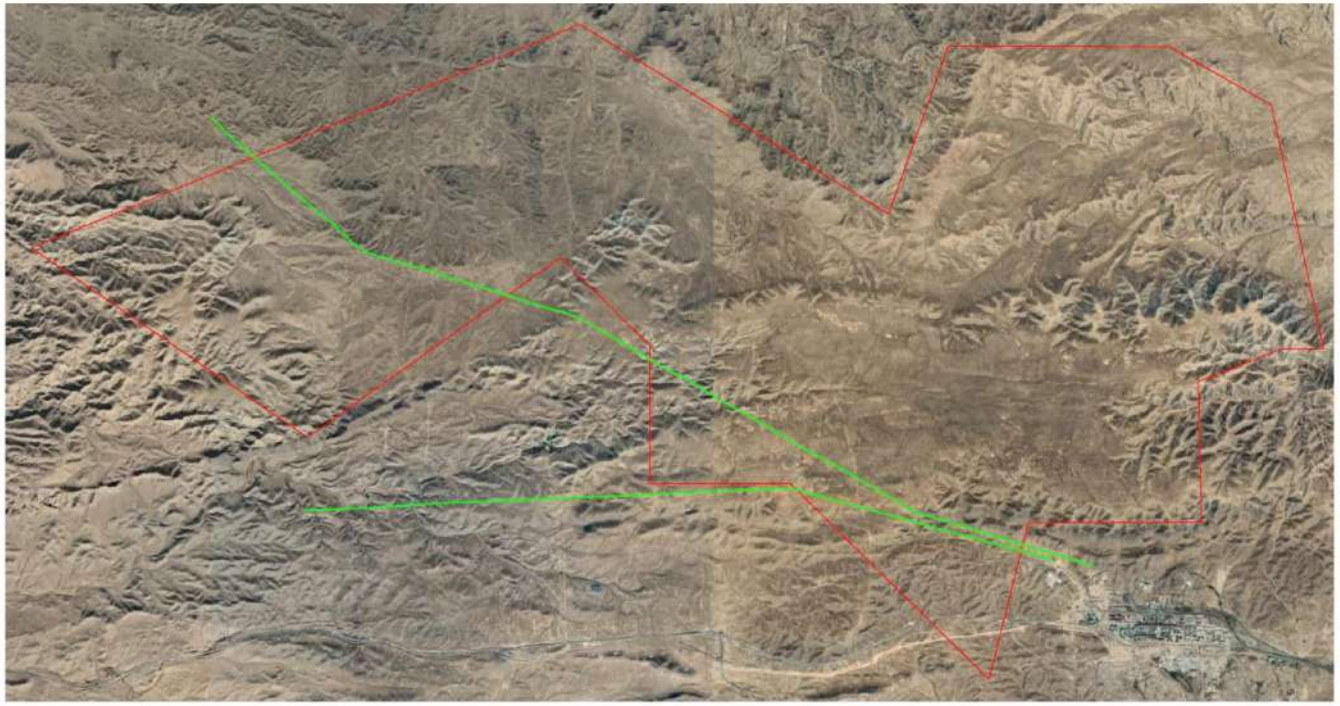


Fig. 4 OHTLs on the project territory

During the survey in the spring of 2021, the remains of 4 dead birds belonging to 3 species were found (Table 8).

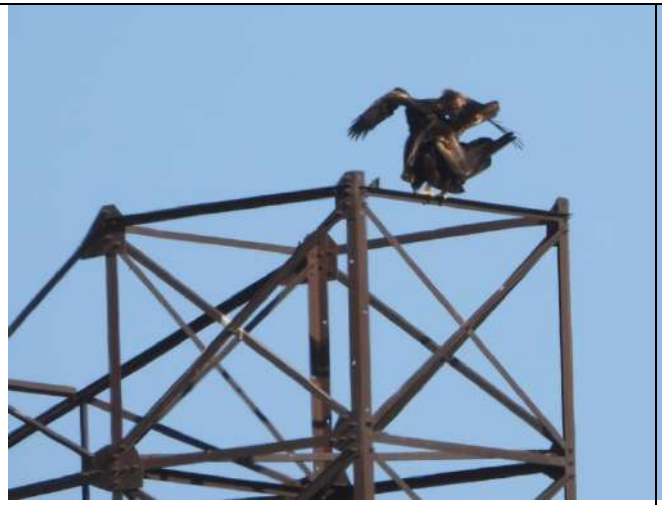
It should be noted that the actual number of dead birds could be several times more, because such terrestrial animals as a foxes, and other birds like ravens, are usually collecting dead birds. Many raptor bird species use the OHTL poles for looking for a prey and for recreation.

Table 8 Results of the survey under exciting OHTLs

№	Latin name	English name	Number of birds	Coordinates	Date
1.	*Galerida cristata*	Crested lark	1	N 41°32'53.45", E 64°26'14.06"	12.02.2021
2.	*Galerida cristata*	Crested lark	1	N 41°34'34.85", E 64°22'31.86"	01.04.2021
3.	*Circus sp.*	Harrier male	1	N 41°33'29.44", E 64°25'19.87"	02.04.2021
4.	*Oenanthe isabellina*	Isabelline Wheatear	1	N 41°34'31.79", E 64°22'44.82"	15.05.2021

OHTLs near the Muruntau mine

OHTLs on the project territory

		
Kestrel	Golden Eagle, mating games 12.02.2021	Saker Falcon 03.04.2021
Cinereous Vulture flying over the OHTLs	Fox - local predator and scavenger	Raptor flying over the OHTLs

Crested lark 01.04.2021	Isabelline Wheatear 15.05.2021.	OHTL near found dead Harrier
The remains of the feathers of a male harrier, the species is not determined		

CONCLUSIONS

The observations for Zarafshan Wind Farm project were carried out according to the methodology described in Scottish Natural Heritage: recommended bird survey methods to justify the assessment of the impact of surface wind farms. The observations were carried out at 14 Vantage points. The total duration of all the observations in the territory in the Spring season was **546 hours**. The weather conditions during VP observations were also recorded: cloud coverage, precipitation, air temperature, wind speed and direction.

Main findings of the Spring 2021 observations:

This year in the Spring on the territory of Uzbekistan, maybe throughout Central Asia, the weather was very unstable. In early February, the temperature rose to 20°C and many animals woke up from hibernation early. In mid-March there were a few days of cold weather with frosts, followed by snow and rain throughout the desert zone of Uzbekistan. Cattle farmers and shepherds suffered great losses – many newborn lambs and even adult animals died - first from the sharp cold, and then from lack of food. The desert's already sparse vegetation, mostly ephemeral plants, has barely appeared this year. All this was reflected in the activity of birds of prey and their nesting. Nesting of birds of prey depends on many factors, such as: the state and success of breeding of forage (rodents, reptiles, etc), on weather conditions, the success wintering and migration, disturbance factors and others. For this reason, it is possible that nesting in the area has an unstable character and vary from year to year. It is known from the literature that many large birds of prey do not breed in the years of the lowest density of rodents - their main food objects.

The most numerous birds of prey observed in Spring 2021 were Golden Eagle, Long-legged Buzzard, Kestrel and Little Owl.

Egyptian Vulture and Cinereous Vulture appeared from April.

Greylag Goose were observed on the flight on April 2, 2021.

According to the literature, Steppe Eagle nests only in Karakalpak Ustyurt, and nesting has not been noted anywhere in the Kyzylkum. During the spring observations, Steppe Eagle was observed only twice in April.

In spring, we often encountered flocks of Crested Larks, Black-necked Wheatear, and Isabelline Wheatear. On the rocky areas, we observed Chukar Partridge. Next to the project area, there is a recreation area with a small pond, around which we observed such species as Larks, Pigeon, Sparrows, Indian Myna, Collared Turtle Dove and Laughing Turtle Dove.

Appendix 1. Weather conditions during VP Summer surveys

Table 9 Weather conditions and visibility in March

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
25 March	cloudy, 4-6 m/s	cloudy, 4-5 m/s												
26 March			sunny 4-5 m/s	sunny 4-6 m/s										
27 March					cloudy, rainy day, 5-6 m/s	cloudy, rainy day, 5-7 m/s								
28 March							Sunny 4-6 m/s			Sunny 4-5 m/s				
29 March								Sunny 5-6 m/s	Sunny 5-7 m/s					
30 March											Sunny 5-6 m/s	Sunny 5-7 m/s		
31 March													Sunny 5-6 m/s	/s Sunny 5-6 m/s

Table 10 Weather conditions and visibility in April

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
2 April	sunny 5-6 m/s	sunny 4-5 m/s												
3 April			partly cloudy, 4-5 m/s	partly cloudy, 4-5 m/s										
4 April					cloudy, 4-6 m/s	cloudy, 5-7 m/s								
5 April							Sunny 4-6 m/s			Sunny 5-7 m/s				
6 April								Sunny 5-6 m/s	Sunny 4-5 m/s					
7 April											Sunny 5-6 m/s	Sunny 5-6 m/s		
8 April													Sunny 5-6 m/s	Sunny 3-5 m/s
10 April							Sunny 4-6 m/s			Sunny 4-5 m/s				
11 April					Sunny 4-5 m/s	Sunny 4-5 m/s								
12 April			Sunny 4-6 m/s	Sunny 5-7 m/s										
13 April	Sunny 4-5 m/s	Sunny 5-7 m/s												
14 April											half cloudy, 5-6 m/s	cloudy, 5-6 m/s		
15 April													cloudy, 3-4 m/s	cloudy, 5-6 m/s
16 April	Sunny 4-5 m/s	Sunny 4-5 m/s												

17 April			Sunny 5-6 m/s	Sunny 4-5 m/s										
19 April					Sunny 4-6 m/s	Sunny 5-7 m/s								
20 April								Sunny 4-6 m/s	Sunny 5-7 m/s					
21 April							Sunny 4-5 m/s			Sunny 3-5 m/s				
22 April											Sunny 5-6 m/s	Sunny 5-6 m/s		
23 April													cloudy, 4-6 m/s	cloudy, 5-6 m/s
24 April								Sunny 4-6 m/s	Sunny 4-5 m/s					
25 April	cloudy, rainy 4-5 m/s	cloudy, rainy 5-6 m/s												
26 April			Sunny 2-3 m/s	Sunny 4-6 m/s										
27 April					Sunny 4-6 m/s	Sunny 3-5 m/s								
28 April							half cloudy, 5-6 m/s			half cloudy, 4-5 m/s				
29 April								cloudy, 3-5 m/s	cloudy, 4-6 m/s					
30 April											Sunny 5-6 m/s	Sunny 4-6 m/s		

Table 11 Weather conditions and visibility in May

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
2 May	sunny 5-6 m/s	sunny 4-5 m/s	sunny 4-5 m/s											
3 May				partly cloudy 4-6 m/s	cloudy 4-6 m/s	cloudy 6-7 m/s								
4 May							cloudy, 5-6 m/s	partly cloudy, 4-6 m/s		partly cloudy, 5-6 m/s				
5 May									partly cloudy, 5-6 m/s		partly cloudy, 5-6 m/s	partly cloudy, 3-4 m/s		
6 May													partly cloudy, 5-6 m/s	partly cloudy, 6-7 m/s
7 May	partly cloudy, 4-6 m/s	cloudy, 5-6 m/s	cloudy, 3-5 m/s											
8 May				Sunny 5-7 m/s	Sunny 4-6 m/s	Sunny 4-5 m/s								
10May							Sunny 5-7 m/s	Sunny 5-6 m/s		Sunny 4-5 m/s				
11 May									Sunny 5-6 m/s		Sunny 4-5 m/s	Sunny 5-6 m/s		
12May													cloudy, 4-5 m/s	cloudy, 3-4 m/s
13 May	cloudy, 5-6 m/s	cloudy, 4-5 m/s	cloudy, 5-6 m/s											
14 May				Sunny 4-6 m/s	Sunny 5-7 m/s	Sunny 4-6 m/s								
15 May							Sunny 5-7 m/s	Sunny 4-5 m/s		Sunny 3-5 m/s				

16 May									Sunny 5-6 m/s		Sunny 5-6 m/s	Sunny 4-6 m/s		
17 May													partly cloudy 4-6 m/s	partly cloudy 4-5 m/s
19 May	Sunny 4-6 m/s	Sunny 2-3 m/s	Sunny 4-6 m/s											
20 May				Sunny 3-5 m/s	Sunny 4-5 m/s	Sunny 5-6 m/s								
21 May							cloudy, 5-6 m/s			cloudy, 5-6 m/s		cloudy, 4-6 m/s		
22 May								cloudy, 4-6 m/s	cloudy, 5-6 m/s		cloudy, 4-6 m/s			
23 May													Sunny 5-6 m/s	Sunny 4-6 m/s
24 May	Sunny 2-3 m/s	Sunny 4-6 m/s	Sunny 3-5 m/s											
25 May				Sunny 5-6 m/s	Sunny 5-6 m/s	Sunny 4-5 m/s								
27 May							Sunny 4-6 m/s			Sunny 4-6 m/s		Sunny 4-6 m/s		
28 May													Sunny 4-5 m/s	Sunny 5-6 m/s
29 May	Sunny 5-6 m/s	Sunny 4-6 m/s	Sunny 5-6 m/s											
30 May				Sunny 4-6 m/s	Sunny 5-6 m/s	Sunny 5-6 m/s								
31 May							Sunny 4-5 m/s			Sunny 4-6 m/s		Sunny 4-6 m/s		

Table 12 Weather conditions and visibility in June

Data	VP 1	VP 2	VP 3	VP 4	VP 5	VP 6	VP 7	VP 8	VP 9	VP 10	VP 11	VP 12	VP 13	VP 14
2 June													sunny, hot 2-3 m/s	sunny, hot 2-3 m/s
3 June								sunny, 3-4 m/s	sunny, hot 1-2 m/s		sunny, hot 3-5 m/s			
4 June	sunny 3-5 m/s	sunny, hot 3-4 m/s	sunny, hot 2-3 m/s											
5 June													sunny, hot 1-3 m/s ,	sunny, hot 2-3 m/s
6 June								sunny, hot 3-4 m/s	sunny, 4-6 m/s		sunny, hot 1-3 m/s			
7 June				sunny, 3-4 m/s	sunny, hot 2-4 m/s	sunny, hot 1-2 m/s								
8 June							sunny, hot 2-3 m/s			sunny, hot 2-3 m/s		sunny, hot 2-3 m/s		
9 June								sunny, hot 3-5 m/s	sunny, hot 3-5 m/s		sunny, hot 2-4 m/s			
10 June													sunny, hot 3-5 m/s	sunny, hot 2-4 m/s

Appendix 2. Vantage Point Data Logs

VP survey results in March

VP 1

Date: 25.03.2021. Start and end time: 8:47 –11:47
Weather:
The air temperature: start 4°C end 10°C cloudy.
Wind speed approx. (4-6 m/s) No precipitation

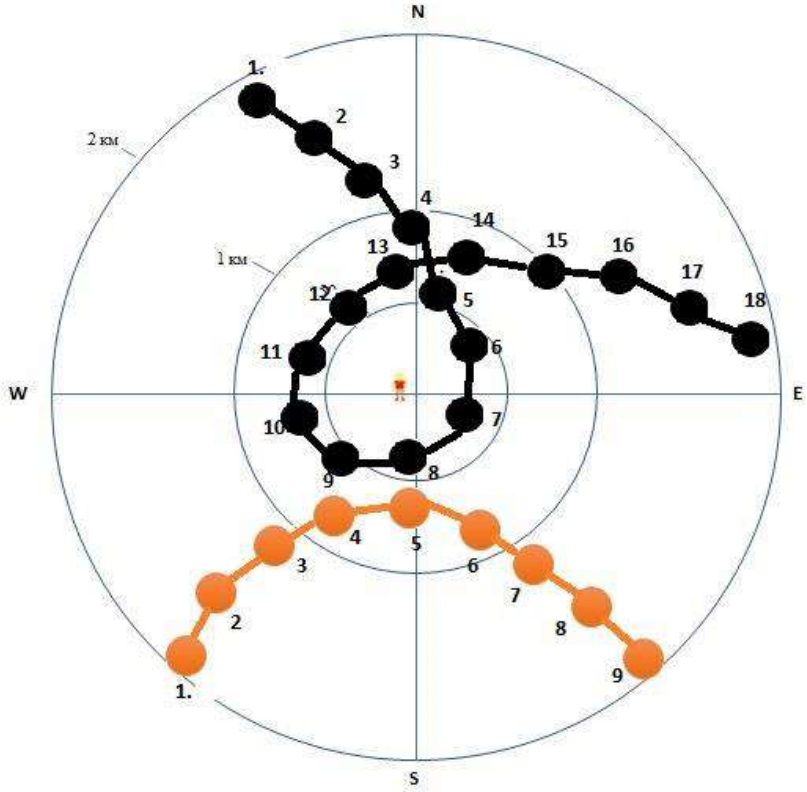


Fig. 5 Flight path (VP 1), 25.03.2021

Table 13 Target species log (VP 1), 25.03.2021

	Aquila chrysaetos	**9:12**	1 130 m	2 130 m	3 130 m	4 125 m	5 125 m	6 120 m	7 120 m	8 120 m	9 120 m	10 130 m	11 130 m	12 130 m	13 130 m	14 130 m	15 125 m	16 125 m	17 120 m	18 120 m
	Buteo rufinus	**10:23**	1 45m	2 40m	3 40m	4 45m	5 45m	6 20m	7 20m	8 30m	9 40m									

VP 2

Date: 25.03.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 14°C end 9°C cloudy.
Wind speed approx. (4-5 m/s) No precipitation

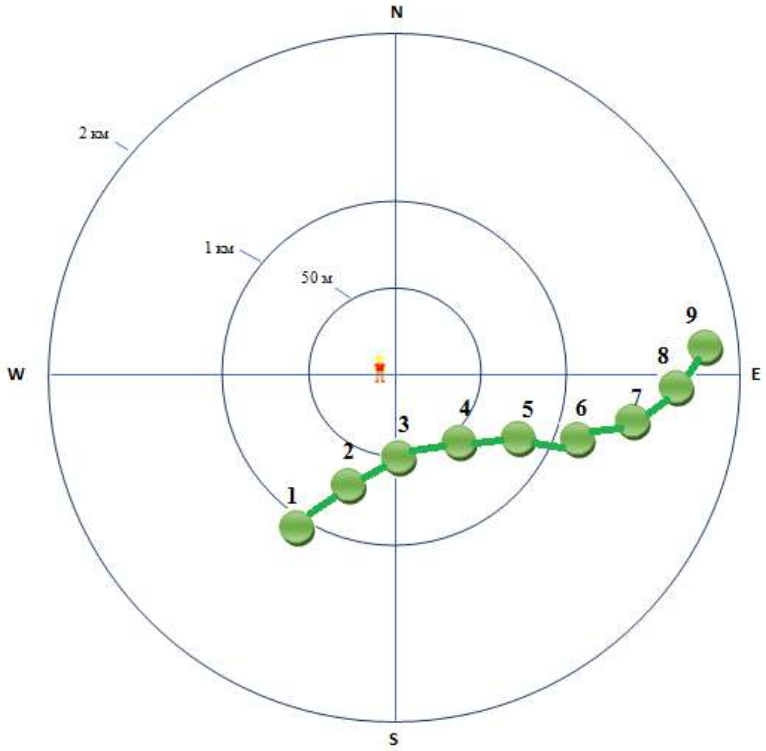


Fig. 6 Flight path (VP 2), 25.03.2021

Table 14 Target species log (VP 2), 25.03.2021

	Falco tinnunculus	**13:41**	1 30m	2 30m	3 30m	4 25m	5 25m	6 20m	7 20m	8 20m	9 20m

VP 3

Date: 26.03.2021. Start and end time: 9:10 – 12:10
Weather:
The air temperature: start 4°C end 11°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 4

Date: 26.03.2021. Start and end time: 12:58 – 16:06
Weather:
The air temperature: start 14°C end 9°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

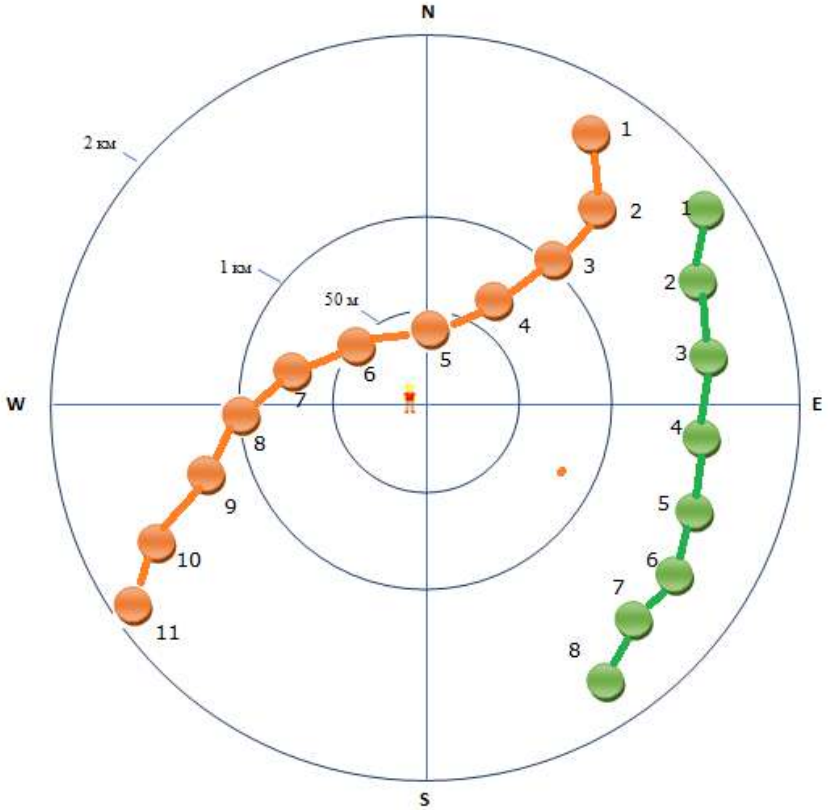


Fig. 7 Flight path (VP 4), 26.03.2021

Table 15 Target species log (VP 4), 26.03.2021

	Buteo rufinus	**13:23**	1 150m	2 150m	3 120m	4 65m	5 45m	6 45m	7 55m	8 45m	9 65m	10 65m	11 60m
	Falco tinnunculus	**15:12**	1 20m	2 25m	3 20m	4 25m	5 25m	6 25m	7 25m	8 25m			

VP 5

Date: 27.03.2021. Start and end time: 8:18 – 11:18
Weather:
The air temperature: start 8°C end 12°C cloudy, rainy day
Wind speed approx. (5-6 m/s) Precipitation
Primary species not found

VP 6

Date: 27.03.2021. Start and end time: 12:28 – 15:29
Weather:
The air temperature: start 14°C end 10°C cloudy, rainy day
Wind speed approx. (5-7 m/s) Precipitation
Primary species not found

VP 7

Date: 28.03.2021. Start and end time: 8:45 – 11:45
Weather:
The air temperature: start 6°C end 11°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

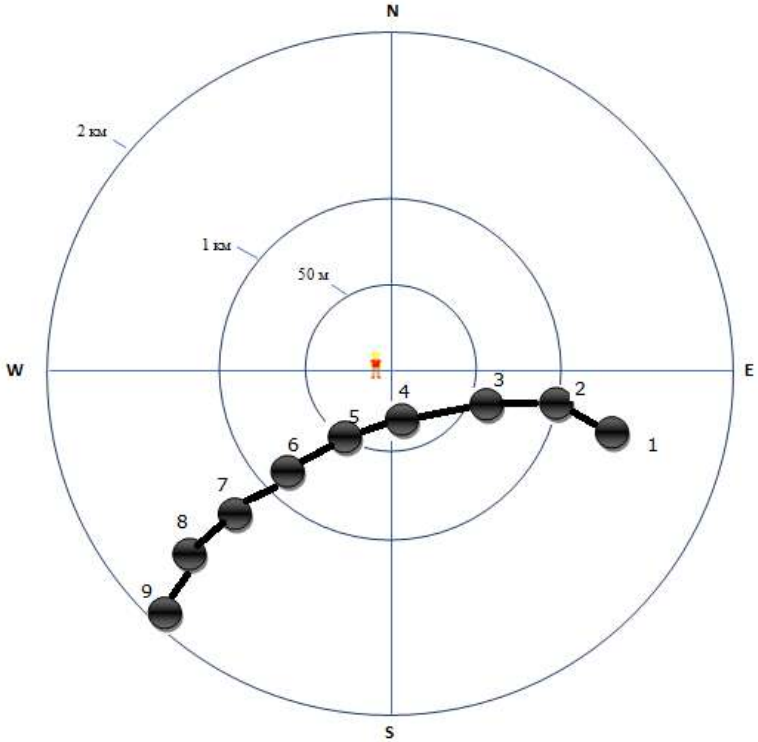


Fig. 8 Flight path (VP 7), 28.03.2021

Table 16 Target species log (VP 7), 28.03.2021

	Aqula chrysaetos	**10:42**	1 125m	2 125m	3 120m	4 125m	5 125m	6 95m	7 95m	8 95m	9 125m

VP 10

Date: 28.03.2021. Start and end time: 12:49 – 15:53
Weather
The air temperature: start 13°C end 5°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 9

Date: 29.03.2021. Start and end time: 8:23 – 11:29
Weather:
The air temperature: start 7°C end 12°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

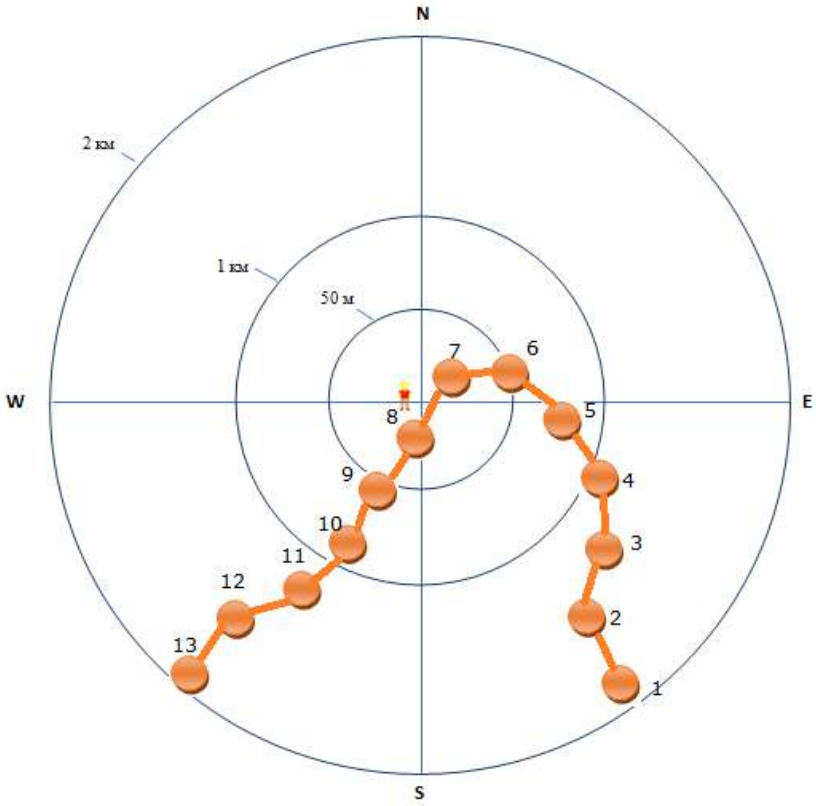


Fig. 9 Flight path (VP 9), 29.03.2021

Table 17 Target species log (VP 9), 29.03.2021

	Buteo rufinus	**9:47**	1 60m	2 30m	3 40m	4 35m	5 45m	6 55m	7 30m	8 35m	9 35m	10 55m	11 30m	12 55m	13 30m

VP 8

Date: 29.03.2021. Start and end time: 13:09 – 16:11
Weather:
The air temperature: start 14°C end 9°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 12

Date: 30.03.2021. Start and end time: 8:46 – 11:52
Weather:
The air temperature: start 9°C end 12°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

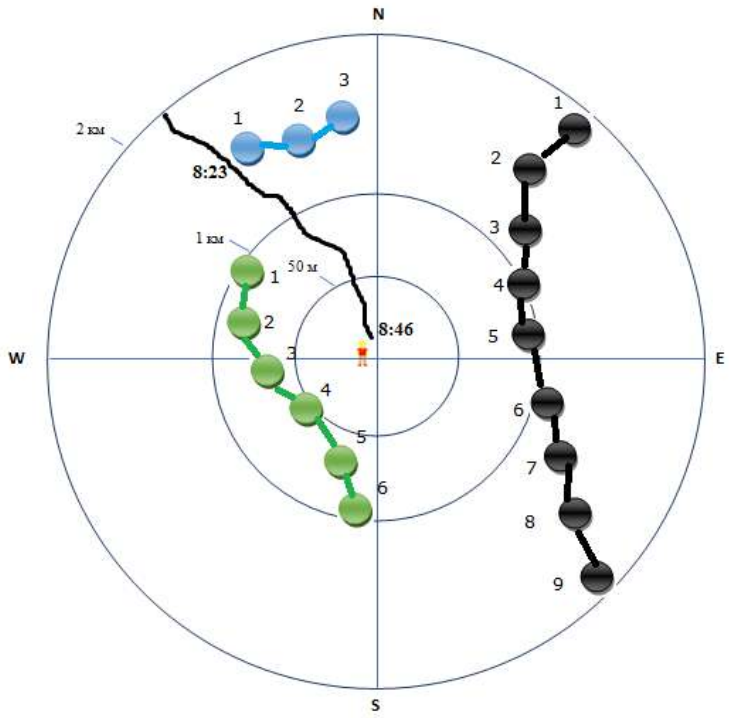


Fig. 10 Flight path (VP 12), 30.03.2021

Table 18 Target species log (VP 12), 30.03.2021

	Athene noctua (is sitting)	**8:23**	1 0m	2 5m	3 0m						
	Falco tinnunculus	**10:56**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m			
	Aquila chrysaetos	**11:16**	1 120m	2 110m	3 120m	4 115m	5 115m	6 125m	7 120m	8 125m	9 125m

VP 11

Date: 30.03.2021. Start and end time: 13:09 – 16:11
Weather:
The air temperature: start 16°C end 10°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 13

Date: 31.03.2021. Start and end time: 9:23–12:25
Weather:
The air temperature: start 9°C end 12°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

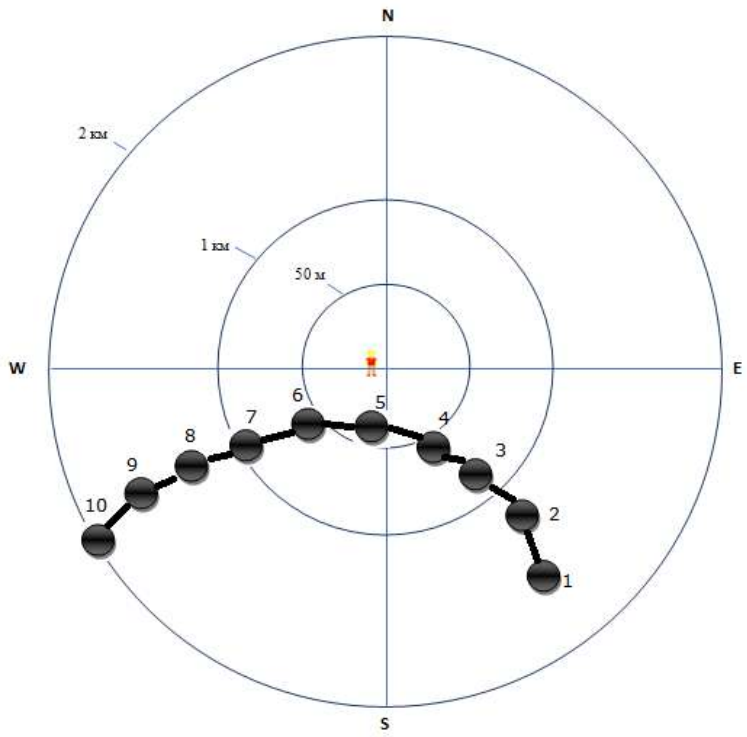


Fig. 11 Flight path (VP 13), 31.03.2021

Table 19 Target species log (VP 13), 31.03.2021

	Aquila chrysaetos	**10:06**	1 130m	2 130m	3 130m	4 130m	5 135m	6 130m	7 130m	8 130m	9 140m	10 140m

VP 14

Date: 31.03.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 14°C end 9°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

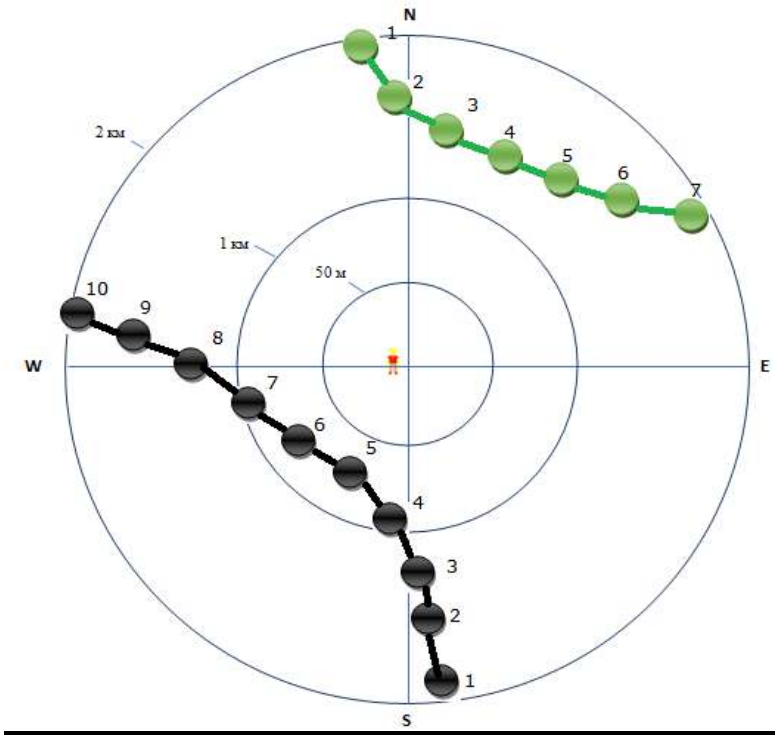


Fig. 12 Flight path (VP 14), 31.03.2021

Table 20 Target species log (VP 14), 31.03.2021

	Falco tinnunculus	**13:52**	1 20m	2 25m	3 25m	4 30m	5 30m	6 35m	7 35m			
	Aquila chrysaetos	**15:56**	1 120m	2 125m	3 125m	4 100m	5 100m	6 115m	7 115m	8 110m	9 110m	10 110m

VP survey results in April

VP 1

Date: 02.04.2021. Start and end time: 8:36 –11:36
Weather:
The air temperature: start 9 °C end 12°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

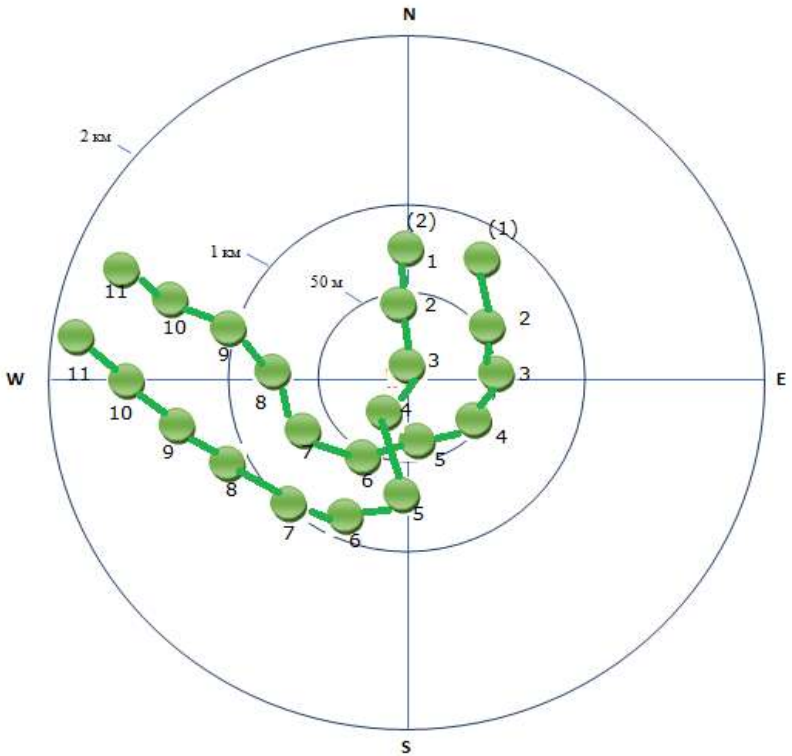


Fig. 13 Flight path (VP 1), 02.04.2021

Table 21 Target species log (VP 1), 02.04.2021

	Gyps fulvus (1)	**9:12**	1 230m	2 230m	3 230m	4 225m	5 225m	6 220m	7 220m	8 220m	9 220m	10 230m	11 230m
	Gyps fulvus (2)	**9:13**	1 245m	2 240m	3 240m	4 245m	5 245m	6 220m	7 220m	8 220m	9 240m	10 240m	11 240m

VP 2

Date: 02.04.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 14°C end 9°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

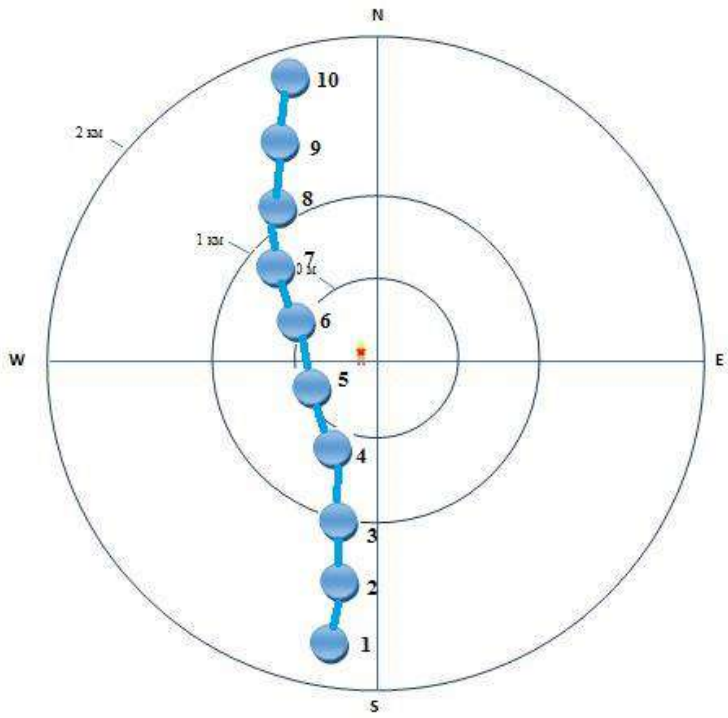


Fig. 14 Flight path (VP 2), 02.04.2021

Table 22 Target species log (VP 2), 02.04.2021

	Anser anser (total 89)	**13:58**	1 360m	2 360m	3 360m	4 365m	5 365m	6 350m	7 350m	8 360m	9 340m	10 340m
	Anser albifrons (total 78)	**13:58**	1 360m	2 360m	3 360m	4 365m	5 365m	6 350m	7 350m	8 360m	9 340m	10 340m

VP 4

Date: 03.04.2021. Start and end time: 9:02 – 12:05
Weather:
The air temperature: start 9°C end 15°C partly cloudy
Wind speed approx. (4-5 m/s) No precipitation

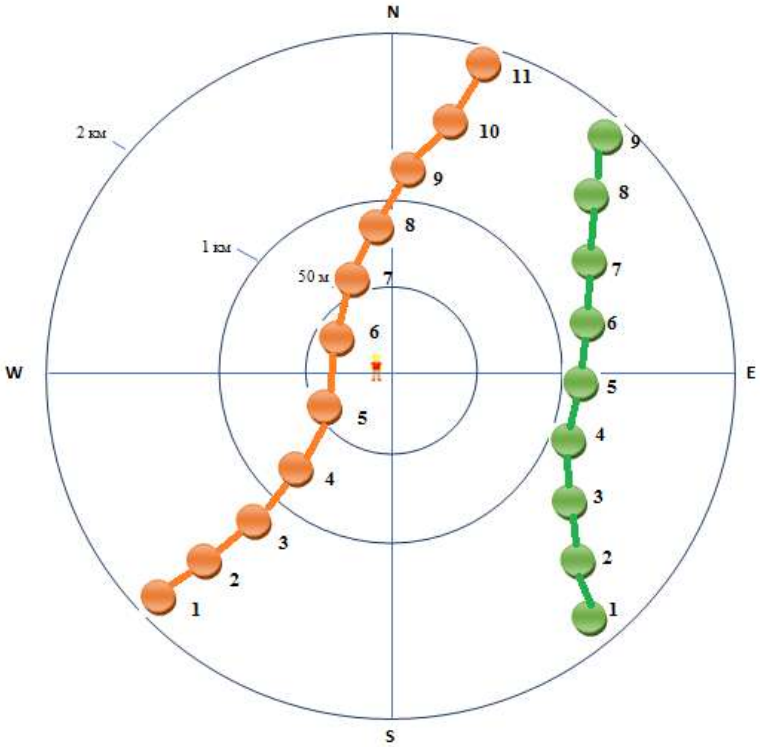


Fig. 15 Flight path (VP 4), 03.04.2021.

Table 23 Target species log (VP 4), 03.04.2021

	Falco cherrug	**14:41**	1 30m	2 30m	3 30m	4 25m	5 25m	6 20m	7 20m	8 20m	9 20m		
	Buteo rufinus	**13:58**	1 60m	2 60m	3 60m	4 65m	5 65m	6 50m	7 50m	8 60m	9 40m	10 40m	11 40m

VP. 4

Date: 03.04.2021. Start and end time: 13:10 – 16:10
Weather:
The air temperature: start 16°C end 11°C partly cloudy
Wind speed approx. (4-5 m/s) No precipitation

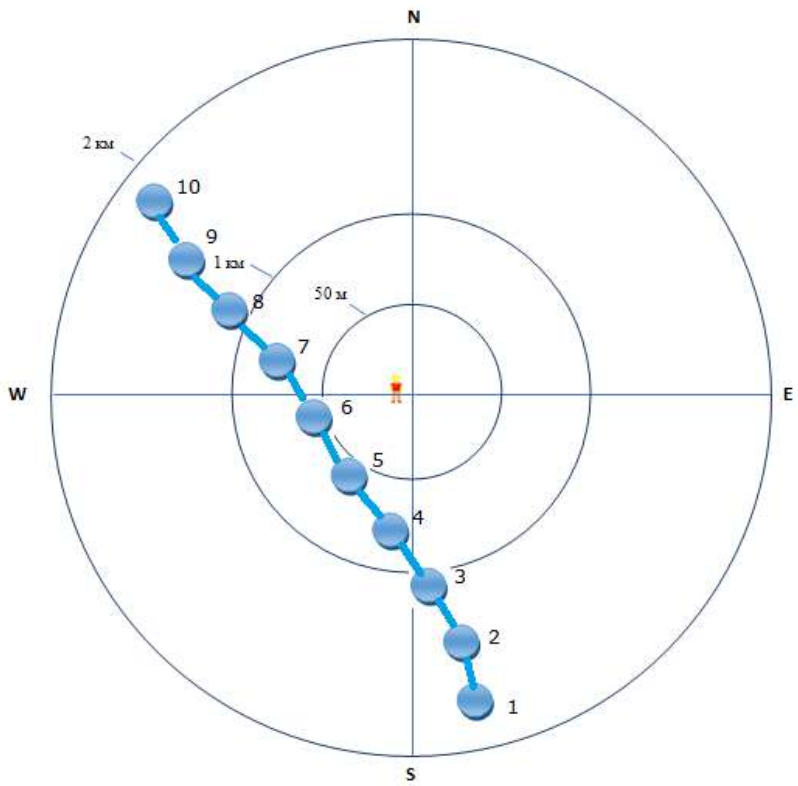


Fig. 16 Flight path (VP 4), 03.04.2021

Table 24 Target species log (VP 4), 03.04.2021

	Anthropoides virgo (total-13)	**13:58**	1 360m	2 360m	3 360m	4 365m	5 365m	6 350m	7 350m	8 360m	9 340m	10 340m

VP 5

Date: 04.04.2021. Start and end time: 8:58 – 12:06
Weather:
The air temperature: start 8°C end 12°C cloudy
Wind speed approx. (4-6 m/s) No precipitation

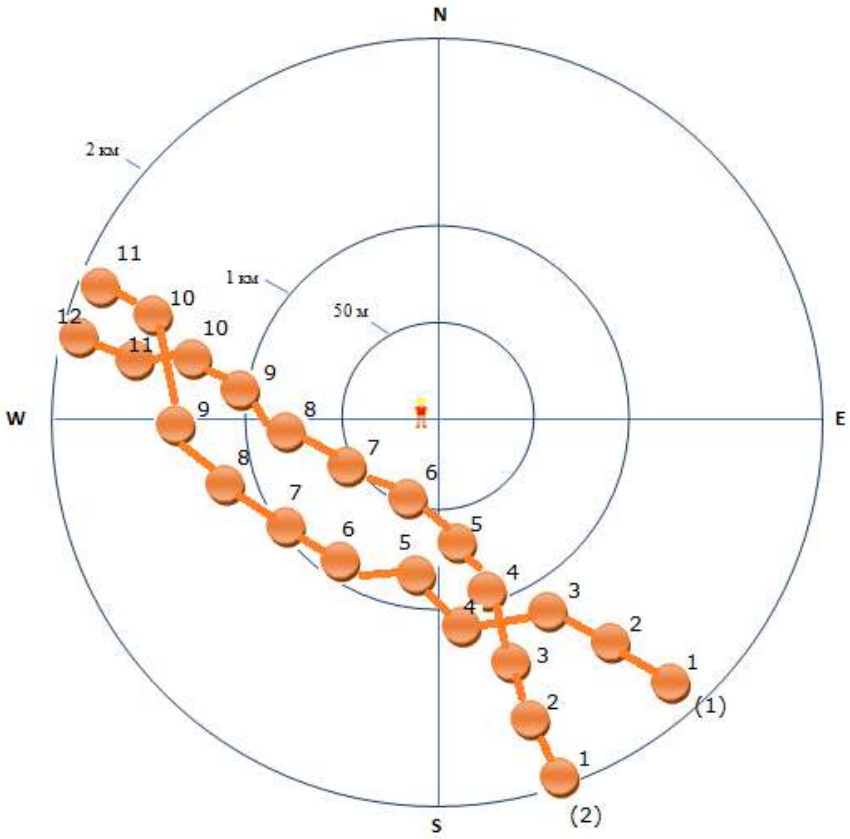


Fig. 17 Flight path (VP 5), 04.04.2021

Table 25 Target species log (VP 5), 04.04.2021

	Buteo rufinus (1)	**9:23**	1 30m	2 20m	3 20m	3 60m	4 45m	5 45m	6 45m	7 55m	8 45m	9 65m	10 65m	11 60m	
	Buteo rufinus (2)	**9:23**	1 20m	2 30m	3 30m	3 60m	4 45m	5 45m	6 45m	7 45m	8 45m	9 65m	10 65m	11 60m	12 60m

VP 6

Date: 04.04.2021. Start and end time: 13:08 – 16:09
Weather:
The air temperature: start 14°C end 10°C cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.7

Date: 05.04.2021. Start and end time: 8:45 – 11:45
Weather:
The air temperature: start 9°C end 11°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

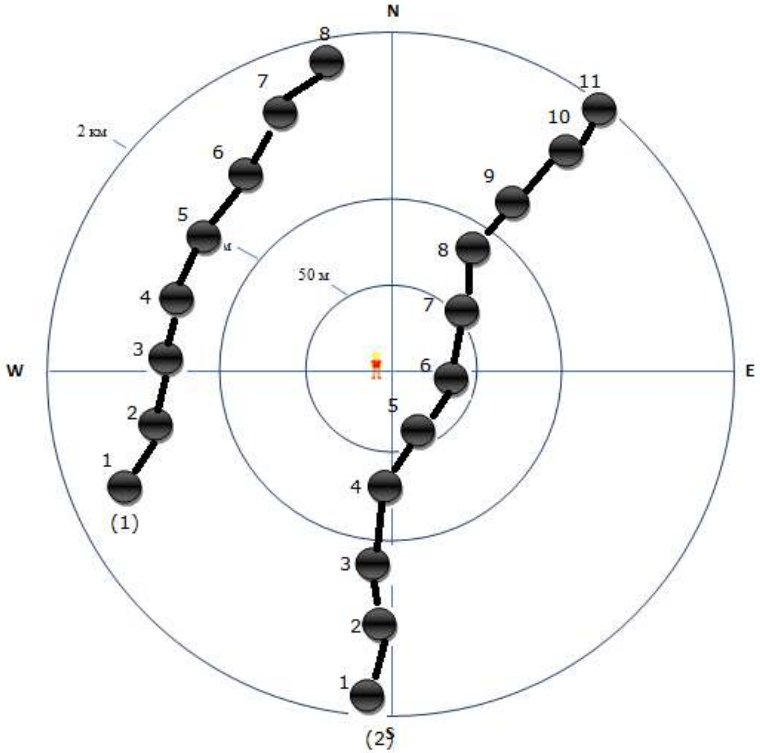


Fig. 18 Flight path (VP 7), 05.04.2021

Table 26 Target species log (VP 7), 05.04.2021

	Aqula chrysaetos (1)	**10:02**	1 125m	2 125m	3 120m	4 125m	5 125m	6 95m	7 95m	8 95m			
	Aqula chrysaetos (2)	**11:37**	1 165m	2 165m	3 160m	4 165m	5 165m	6 165m	7 165m	8 165m	9 165m	10 165m	11 165m

VP 10

Date: 05.04.2021. Start and end time: 12:23 – 15:29
Weather:
The air temperature: start 16°C end 12°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

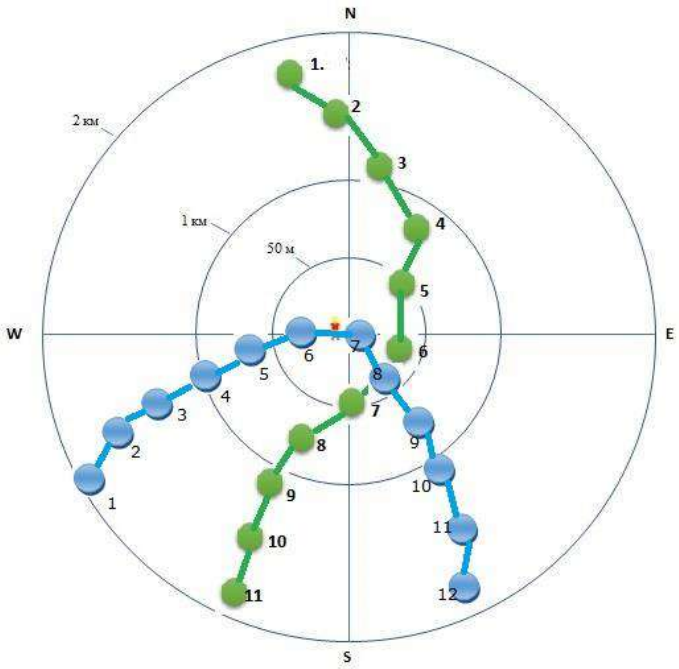


Fig. 19 Flight path (VP 10), 05.04.2021

Table 27 Target species log (VP 10), 05.04.2021

	Falco tinnunculus	**14:47**	1 30m	2 30m	3 20m	4 25m	5 15m	6 15m	7 20m	8 5m	9 5m	10 15m	11 10m	
	Aegypius monachus	**15:01**	1 190m	2 190m	3 190m	4 195m	5 195m	6 195m	7 190m	8 195m	9 195m	10 195m	11 190m	12 195m

VP 9

Date: 06.04.2021. Start and end time: 8:49 – 11:53
Weather
The air temperature: start 8°C end 12°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 8

Date: 06.04.2021. Start and end time: 12:49 – 15:52
Weather:
The air temperature: start 16°C end 11°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

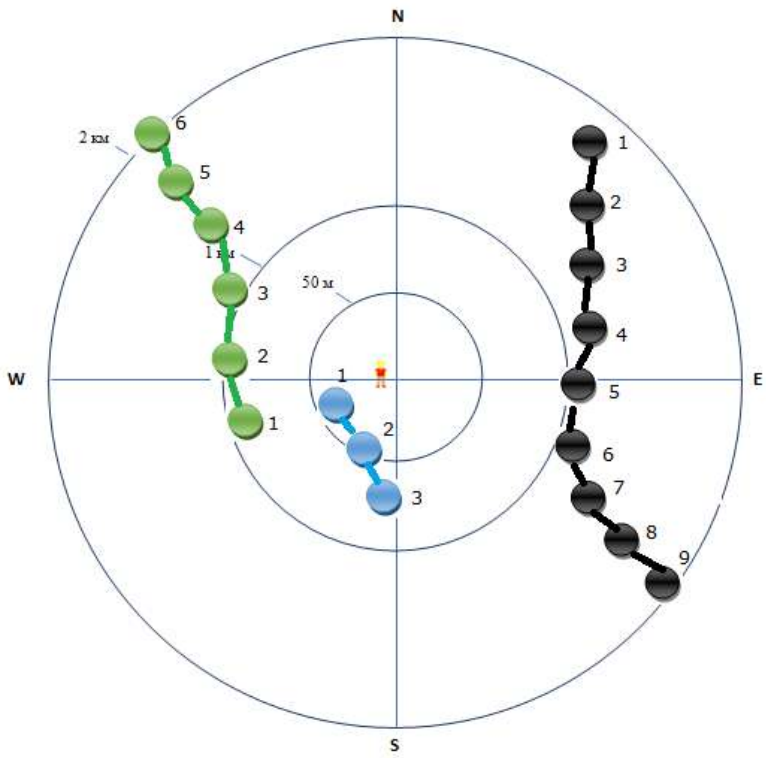


Fig. 20 Flight path (VP 8), 06.04.2021

Table 28 Target species log (VP 8), 06.04.2021

	Athene noctua (was sitting)	**12:48**	1 0m	2 5m	3 0m						
	Falco tinnunculus	**13:56**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m			
	Aquila chrysaetos	**15:16**	1 120m	2 110m	3 120m	4 115m	5 115m	6 125m	7 120m	8 125m	9 125m

VP 11

Date: 07.04.2021. Start and end time: 8:35 – 11:35
Weather:
The air temperature: start 9°C end 12°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 12

Date: 07.04.2021. Start and end time: 12:09 – 15:11
Weather:
The air temperature: start 16°C end 10°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 13

Date: 08.04.2021. Start and end time: 9:09 – 12:09
Weather:
The air temperature: start 11°C end 16°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.14

Date: 08.04.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 21°C end 16°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

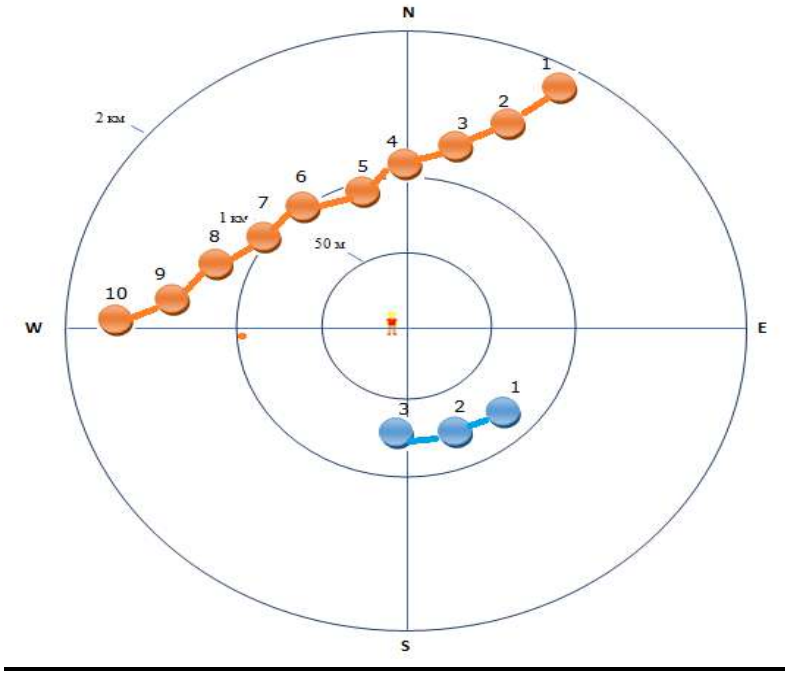


Fig. 21 Flight path (VP 14), 08.04.2021

Table 29 Target species log (VP 14), 08.04.2021

	Athene noctua (was sitting)	**13:52**	1 0m	2 5m	3 0m							
	Buteo rufinus	**15:56**	1 70m	2 65m	3 65m	4 60m	5 50m	6 45m	7 45m	8 40m	9 40m	10 40m

VP 7

Date: 10.04.2021. Start and end time: 8:26 –11:26
Weather:
The air temperature: start 9 °C end 12°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 10

Date: 10.04.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 20°C end 15°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

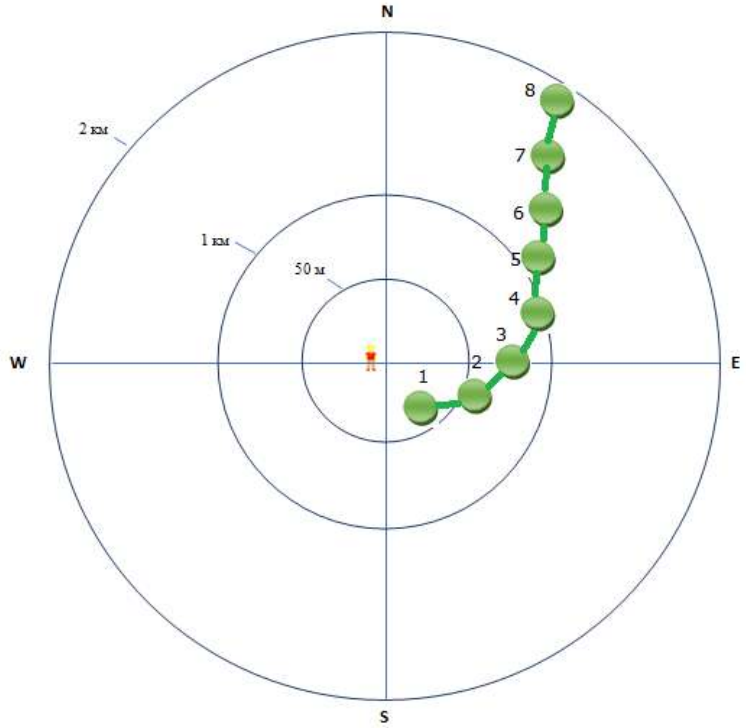


Fig. 22 Flight path (VP 10), 10.04.2021

Table 30 Target species log (VP 10), 10.04.2021

	Falco tinnunculus (was sitting)	**13:01**	1 0m	2 10m	3 10m	4 15m	5 15m	6 10m	7 10m	8 10m

VP 5

Date: 11.04.2021. Start and end time: 9:13 – 12:15
Weather:
The air temperature: start 9°C end 15°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

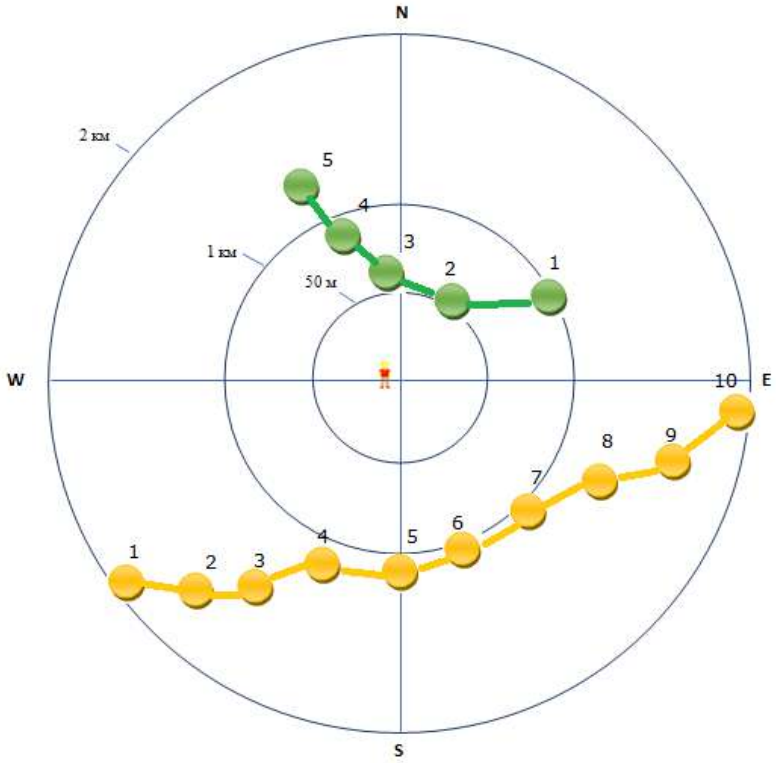


Fig. 23 Flight path (VP 5), 11.04.2021

Table 31 Target species log (VP 5), 11.04.2021

	Falco cherrug (was sitting)	**11:23**	1 20m	2 20m	3 30m	4 25m	5 25m					
	Buteo rufinus	**11:58**	1 60m	2 60m	3 60m	4 65m	5 65m	6 50m	7 50m	8 60m	9 40m	10 40m

VP. 6

Date: 11.04.2021. Start and end time: 13:11 – 16:11
Weather:
The air temperature: start 19°C end 13°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

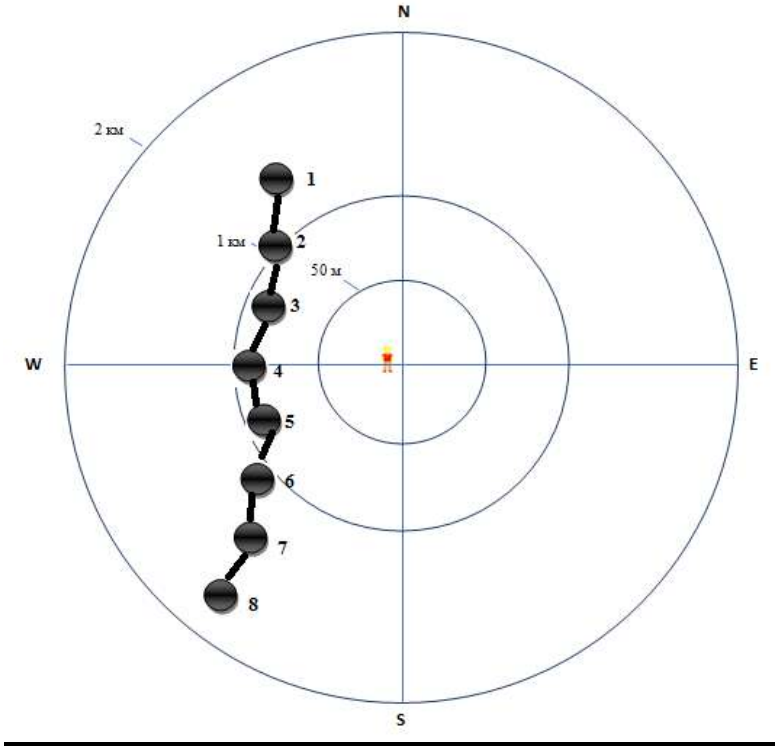


Fig. 24 Flight path (VP 6), 11.04.2021

Table 32 Target species log (VP 6), 11.04.2021

	Aquila nipalensis	**15:41**	1 160m	2 160m	3 160m	4 165m	5 165m	6 150m	7 150m	8 160m

VP 3

Date: 12.04.2021. Start and end time: 8:52 – 11:52
Weather:
The air temperature: start 8°C end 14°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

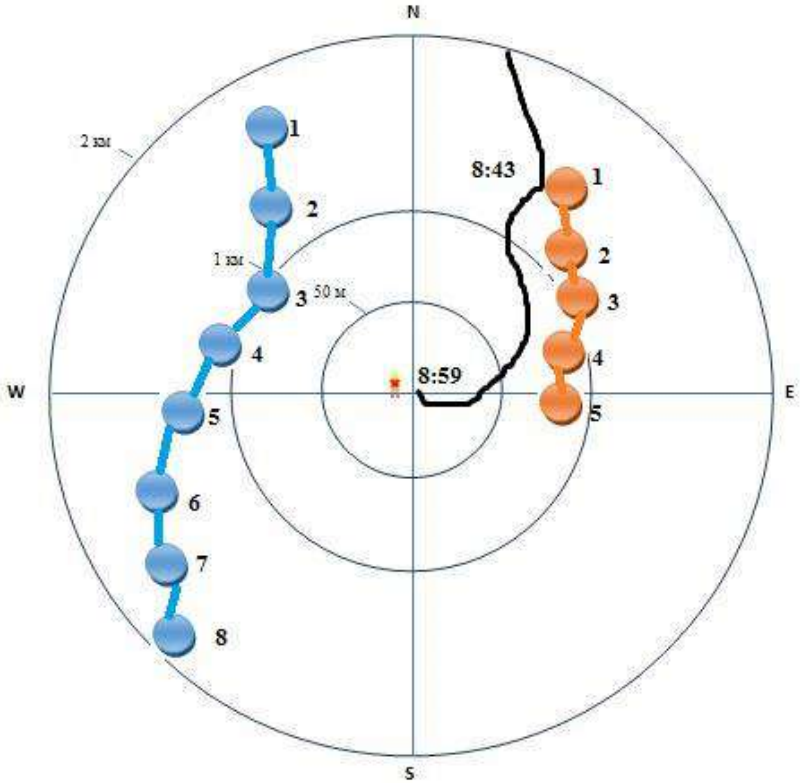


Fig. 25 Flight path (VP 3), 12.04.2021

Table 33 Target species log (VP 3), 12.04.2021

	Asio otus (was sitting)	**8:43**	1 0m	2 0m	3 10m	4 15m	5 15m			
	Aegypius monachus	**11:23**	1 220m	2 220m	3 220m	4 225m	5 215m	6 215m	7 215m	8 215m

VP 4

Date: 12.04.2021. Start and end time: 13:08 – 16:09
Weather:
The air temperature: start 21°C end 16°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

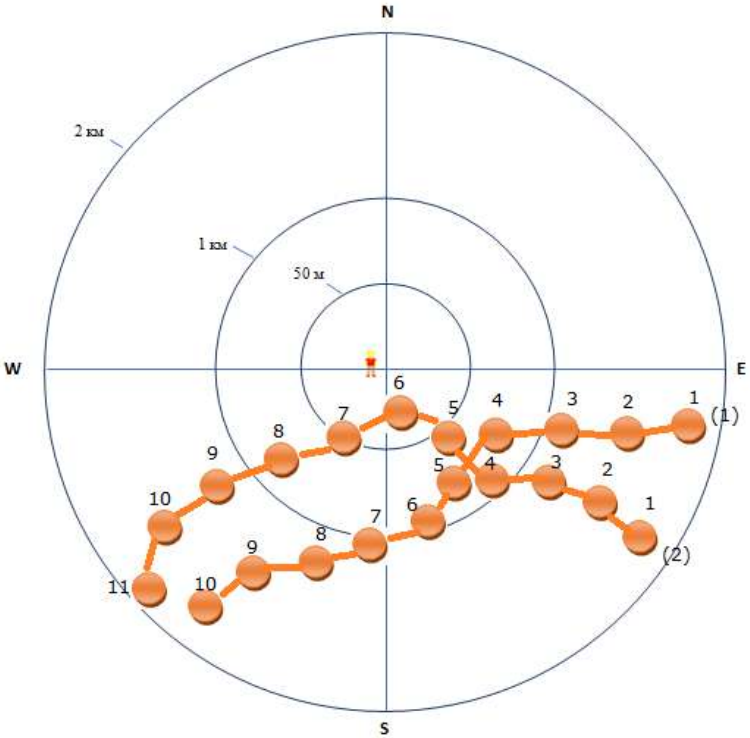


Fig. 26 Flight path (VP 4), 12.04.2021

Table 34 Target species log (VP 4), 12.04.2021

	Buteo rufinus (1) (was sitting)	**14:02**	1 0m	2 5m	3 20m	4 45m	5 45m	6 15m	7 15m	8 25m	9 25m	10 35m	
	Buteo rufinus (2)	**14:08**	1 35m	2 35m	3 30m	4 45m	5 45m	6 45m	7 65m	8 65m	9 65m	10 65m	11 65m

VP 2

Date: 13.04.2021. Start and end time: 9:23 – 11:23
Weather:
The air temperature: start 9°C end 12°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

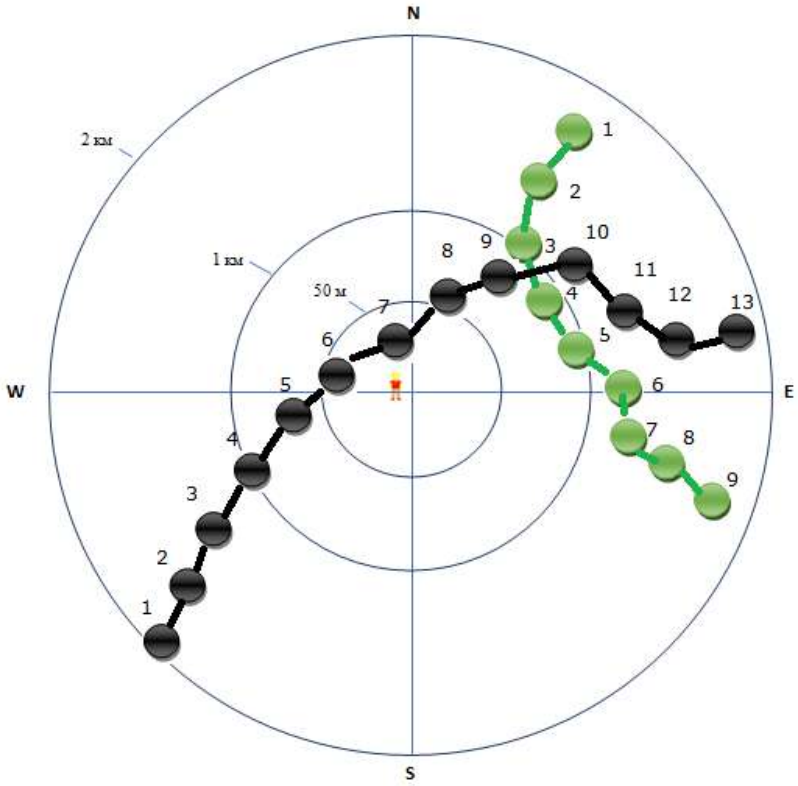


Fig. 27 Flight path (VP 2), 13.04.2021

Table 35 Target species log (VP 2), 13.04.2021

	Falco tinnunculus	**9:47**	1 10m	2 20m	3 10m	4 15m	5 15m	6 15m	7 20m	8 5m	9 5m				
	Aqula chrysaetos	**11:01**	1 190m	2 190m	3 190m	4 195m	5 195m	6 195m	7 190m	8 195m	9 195m	10 195m	11 190m	12 195m	13 195m

VP 1

Date: 13.04.2021. Start and end time: 12:49 – 15:53
Weather
The air temperature: start 19°C end 12°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 11

Date: 14.04.2021. Start and end time: 8:49 – 11:52
Weather:
The air temperature: start 8°C end 11°C half cloudy,
Wind speed approx. (5-6 m/s) No precipitation

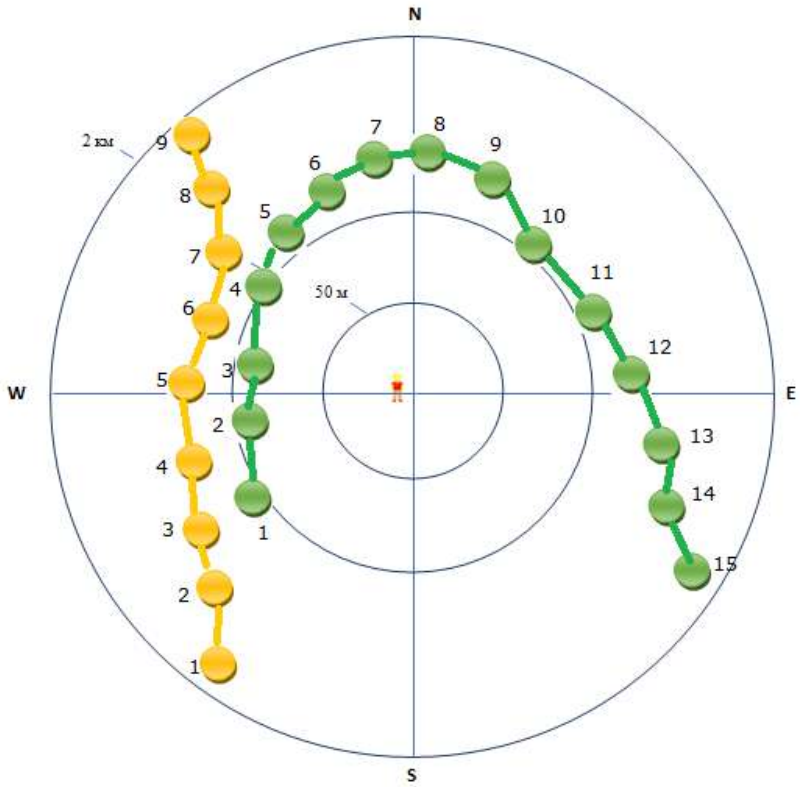


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Fig. 28 Flight path (VP 11), 14.04.2021

Table 36 Target species log (VP 11), 14.04.2021

	Circus cyaneus	**10:56**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 15m	8 20m	9 10m						
	Gyps fulvus	**11:16**	1 220m	2 210m	3 220m	4 215m	5 215m	6 225m	7 220m	8 225m	9 225m	10 220m	11 210m	12 220m	13 215m	14 215m	15 225m

VP 12

Date: 14.04.2021. Start and end time: 13:15 – 16:15
Weather:
The air temperature: start 21°C end 18°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 13

Date: 15.04.2021. Start and end time: 9:15 – 12:15
Weather:
The air temperature: start 9°C end 12°C cloudy,
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP.14

Date: 15.04.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 19°C end 13°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation

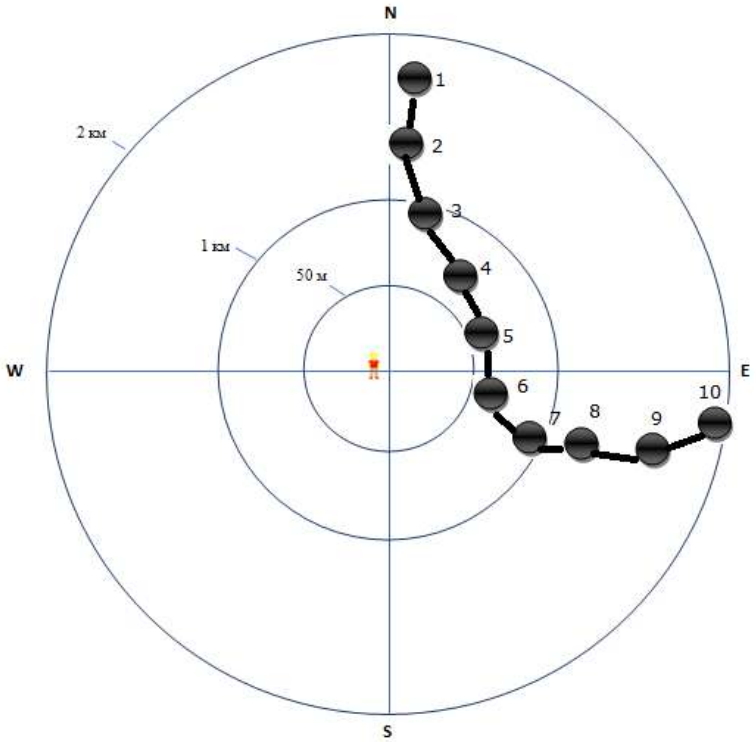


Fig. 29 Flight path (VP 14), 15.04.2021

Table 37 Target species log (VP 14), 15.04.2021

	Aquila chrysaetos	**16:02**	1 70m	2 65m	3 65m	4 60m	5 50m	6 45m	7 45m	8 40m	9 40m	10 40m

VP 1

Date: 16.04.2021. Start and end time: 8:16 –11:16
Weather:
The air temperature: start 9 °C end 13°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 2

Date: 16.04.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 14°C end 9°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

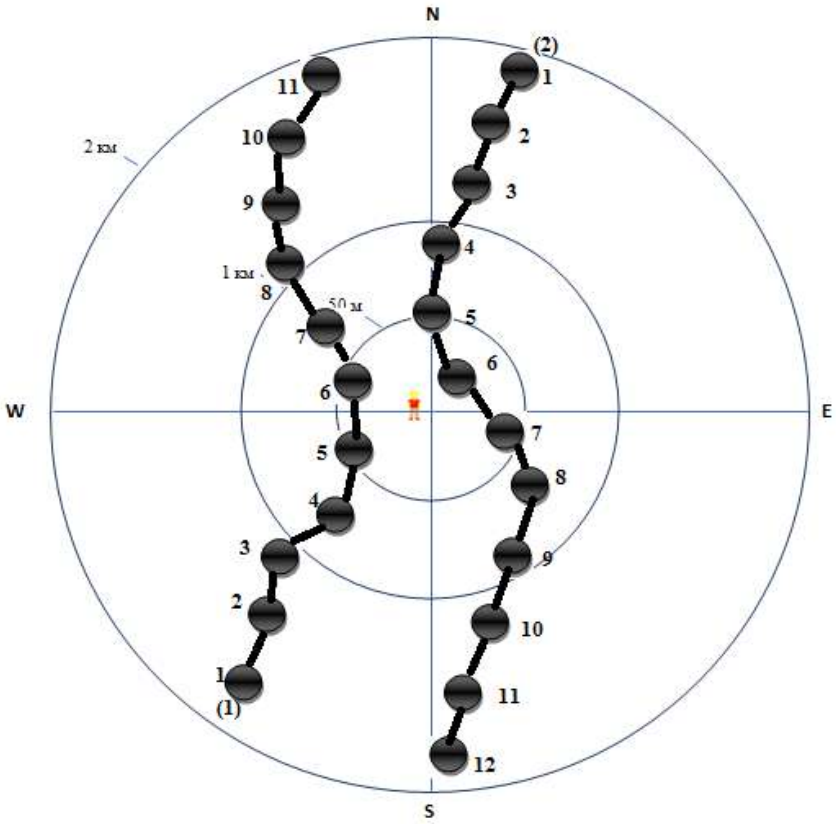


Fig. 30 Flight path (VP 2), 16.04.2021

Table 38 Target species log (VP 2), 16.04.2021

	Aquila chrysaetos(1)	**13:58**	1 160m	2 160m	3 160m	4 165m	5 165m	6 150m	7 150m	8 160m	9 140m	10 140m	11 140m	
	Aquila chrysaetos(2)	**15:32**	1 180m	2 180m	3 160m	4 175m	5 175m	6 750m	7 170m	8 180m	9 180m	10 180m	11 180m	12 180m

VP 4

Date: 17.04.2021. Start and end time: 8:02 – 11:05
Weather:
The air temperature: start 9°C end 15°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

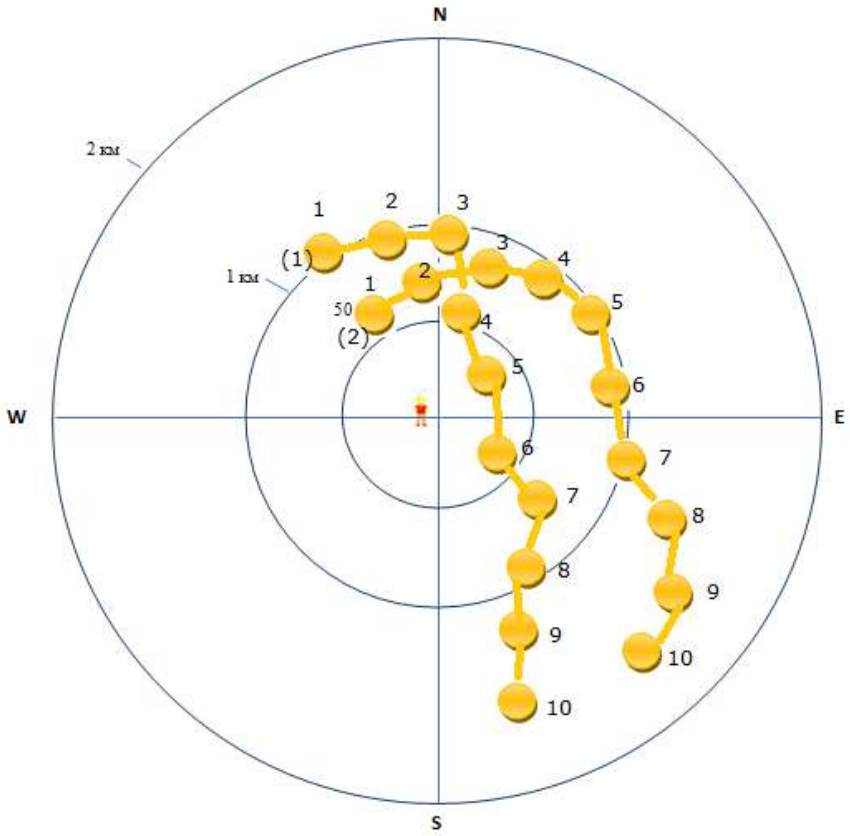


Fig. 31 Flight path (VP 4), 17.04.2021

Table 39 Target species log (VP 4), 17.04.2021

	Buteo rufinus(1) (was sitting)	**8:05**	1 0m	2 20m	3 20m	4 25m	5 25m	6 40m	7 50m	8 60m	9 60m	10 60m
	Buteo rufinus(2) (was sitting)	**8:05**	1 0m	2 20m	3 20m	4 25m	5 25m	6 40m	7 50m	8 60m	9 60m	10 60m

VP 3

Date: 17.04.2021. Start and end time: 12:46 –15:46
Weather:
The air temperature: start 19°C end 13°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 5

Date: 19.04.2021. Start and end time: 8:28 – 11:28
Weather:
The air temperature: start 8°C end 15°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

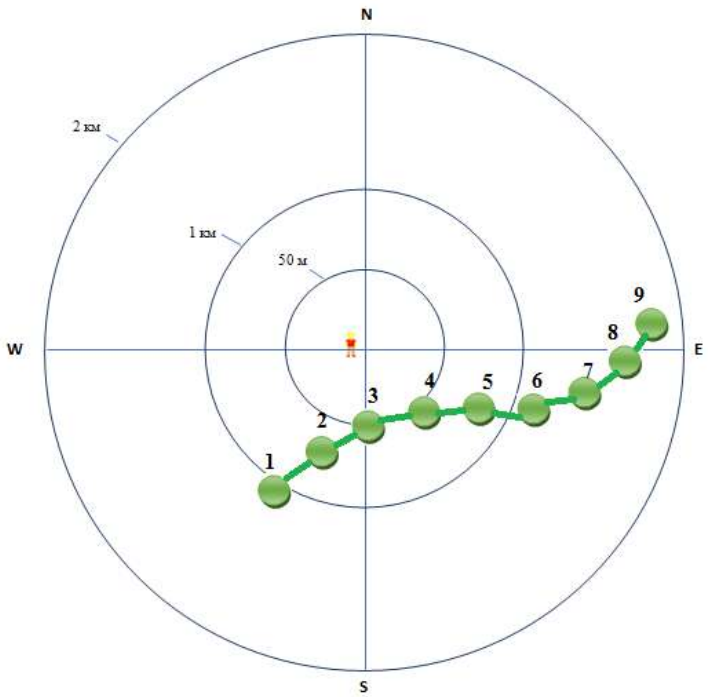


Fig. 32 Flight path (VP 5), 19.04.2021

Table 40 Target species log (VP 5), 19.04.2021

	Falco tinnunculus	**9:23**	1 20m	2 20m	3 20m	4 15m	5 15m	6 15m	7 15m	8 15m	9 15m

VP 6

Date: 19.04.2021. Start and end time: 12:18 – 15:19
Weather:
The air temperature: start 23°C end 16°C is sunny
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP 8

Date: 20.04.2021. Start and end time: 8:35 – 11:35
Weather:
The air temperature: start 9°C end 15°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 9

Date: 20.04.2021. Start and end time: 12:23 – 15:29
Weather:
The air temperature: start 21°C end 16°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

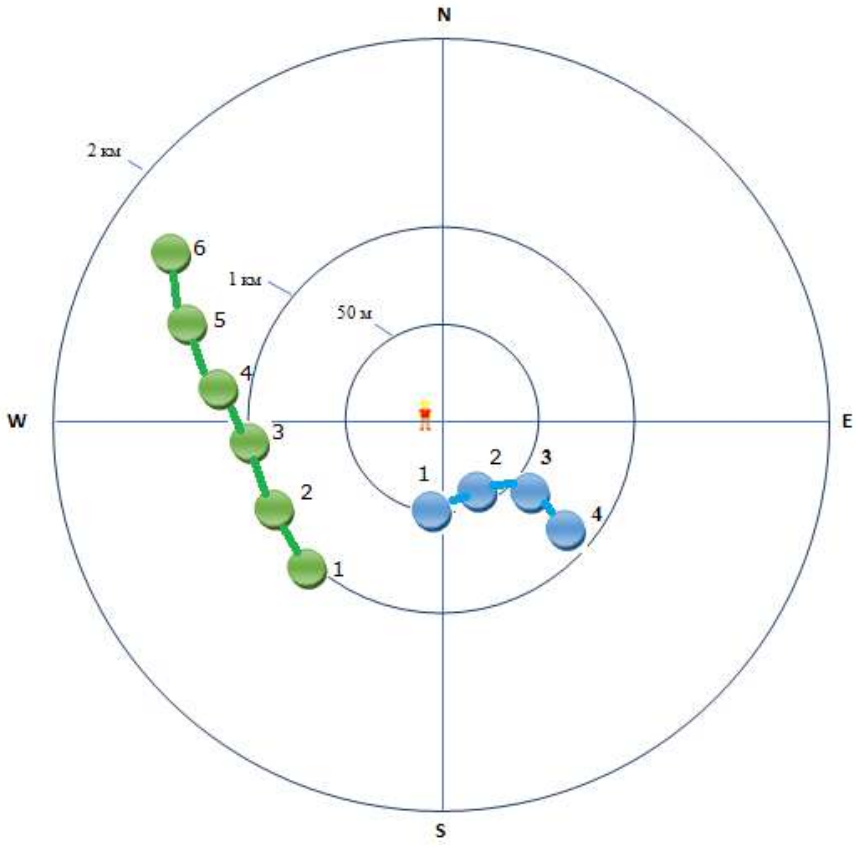


Fig. 33 Flight path (VP 9), 20.04.2021

Table 41 Target species log (VP 9), 20.04.2021

	Athene noctua (was sitting)	**14:47**	1 0m	2 5m	3 5m	4 0m		
	Falco tinnunculus	**15:21**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m

VP 10

Date: 21.04.2021. Start and end time: 7:49 – 10:52
Weather:
The air temperature: start 6°C end 11°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

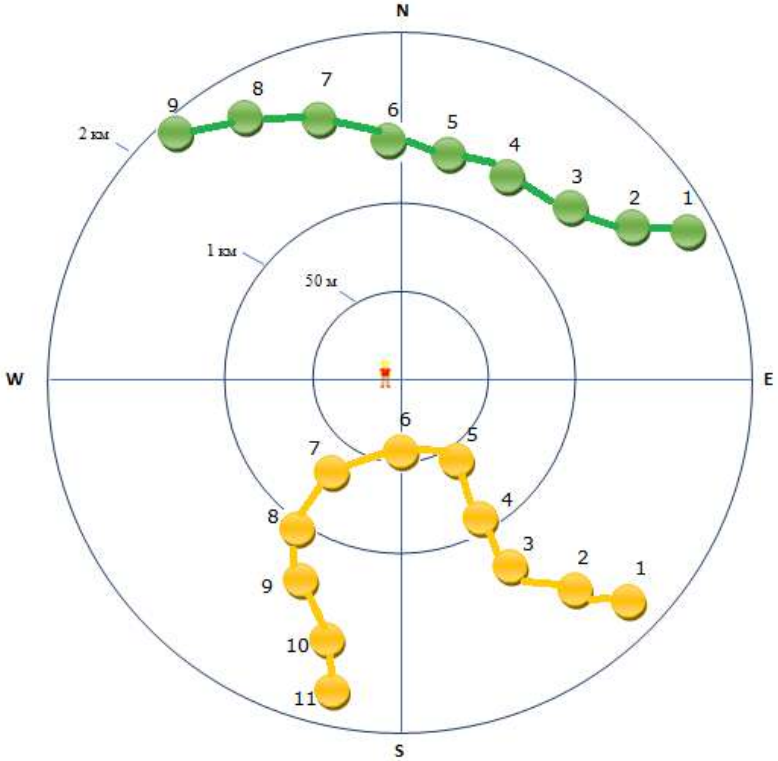


Fig. 34 Flight path (VP 10), 21.04.2021

Table 42 Target species log (VP 10), 21.04.2021

	Falco tinnunculus	**13:56**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 15m	8 15m	9 15m		
	Circus cyaneus	**15:16**	1 20m	2 20m	3 20m	4 15m	5 15m	6 25m	7 20m	8 25m	9 25m	10 25m	11 25m

VP 7

Date: 21.04.2021. Start and end time: 12:35 – 15:35
Weather:
The air temperature: start 25°C end 17°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 11

Date: 22.04.2021. Start and end time: 9:09 – 12:11
Weather:
The air temperature: start 10°C end 21°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 12

Date: 22.04.2021. Start and end time: 13:18 – 16:19
Weather:
The air temperature: start 25°C end 11°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.14

Date: 23.04.2021. Start and end time: 9:13 – 12:14
Weather:
The air temperature: start 9°C end 18°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation

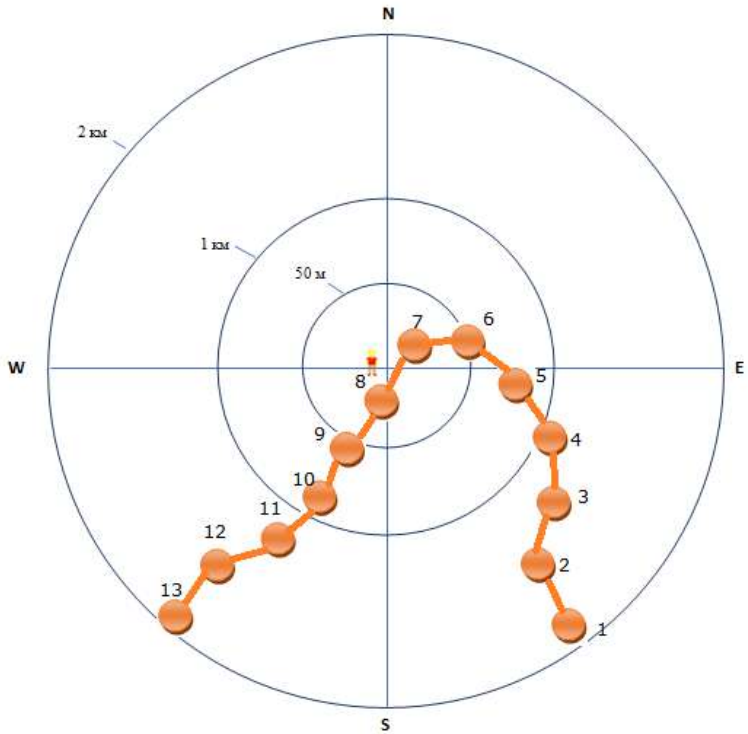


Fig. 35 Flight path (VP 14), 23.04.2021

Table 43 Target species log (VP 14), 23.04.2021

	Buteo buteo	**10:02**	1 70m	2 65m	3 65m	4 60m	5 50m	6 45m	7 45m	8 40m	9 40m	10 40m	11 40m	12 40m	13 40m

VP 13

Date: 23.04.2021. Start and end time: 13:16 –16:16
Weather:
The air temperature: start 23 °C end 13°C cloudy,
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 8

Date: 24.04.2021. Start and end time: 8:46 –11:46
Weather:
The air temperature: start 9°C end 16°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 9

Date: 24.04.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 22°C end 18°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

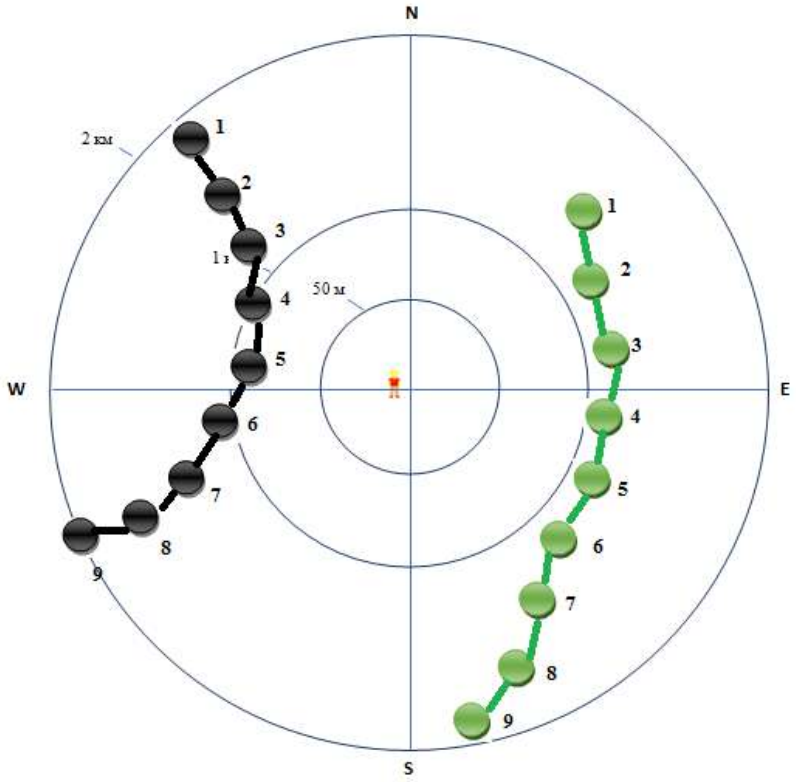


Fig. 36 Flight path (VP 9), 24.04.2021

Table 44 Target species log (VP 9), 24.04.2021

	Gyps fulvus	**14:21**	1 160m	2 160m	3 160m	4 165m	5 165m	6 150m	7 150m	8 160m	9 140m
	Aquila chrysaetos	**15:53**	1 180m	2 180m	3 160m	4 175m	5 175m	6 750m	7 170m	8 180m	9 180m

VP 1

Date: 25.04.2021. Start and end time: 8:05 – 11:05
Weather:
The air temperature: start 9°C end 15°C cloudy, rainy day
Wind speed approx. (4-5 m/s) precipitation
Primary species not found

VP 2

Date: 25.04.2021. Start and end time: 12:46 –15:46
Weather:
The air temperature: start 19°C end 12°C cloudy, rainy day
Wind speed approx. (5-6 m/s) precipitation
Primary species not found

VP 4

Date: 26.04.2021. Start and end time: 8:38 – 11:38
Weather:
The air temperature: start 9°C end 18°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

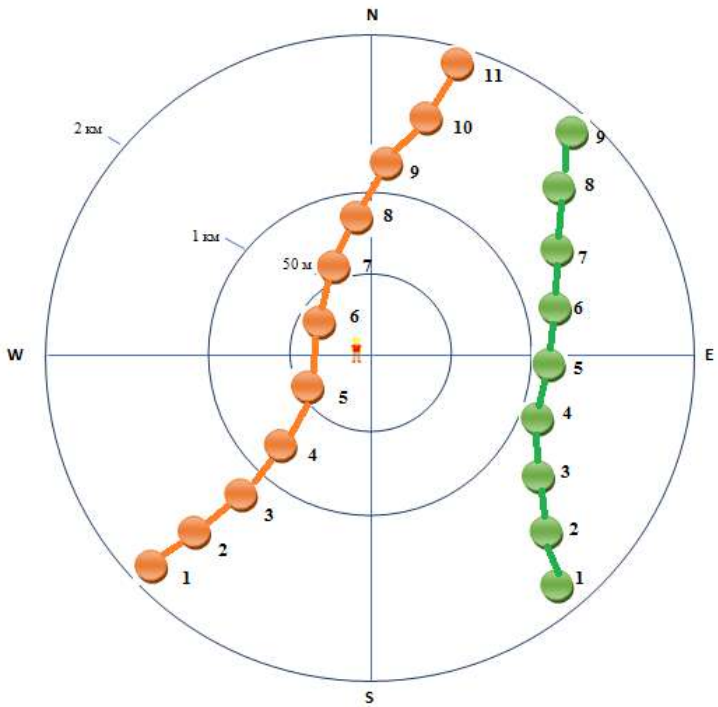


Fig. 37 Flight path (VP 4), 26.04.2021

Table 45 Target species log (VP 4), 26.04.2021

	Falco tinnunculus	**8:49**	1 10m	2 10m	3 20m	4 15m	5 15m	6 15m	7 15m	8 15m	9 15m		
	Buteo rufinus	**10:24**	1 30m	2 20m	3 20m	4 45m	5 25m	6 15m	7 15m	8 15m	9 15m	10 15m	11 15m

VP 3

Date: 26.04.2021. Start and end time: 12:29 – 15:29
Weather:
The air temperature: start 23°C end 16°C is sunny
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP 5

Date: 27.04.2021. Start and end time: 8:45 – 11:45
Weather:
The air temperature: start 10°C end 17°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 6

Date: 27.04.2021. Start and end time: 12:23 – 15:24
Weather:
The air temperature: start 21°C end 16°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

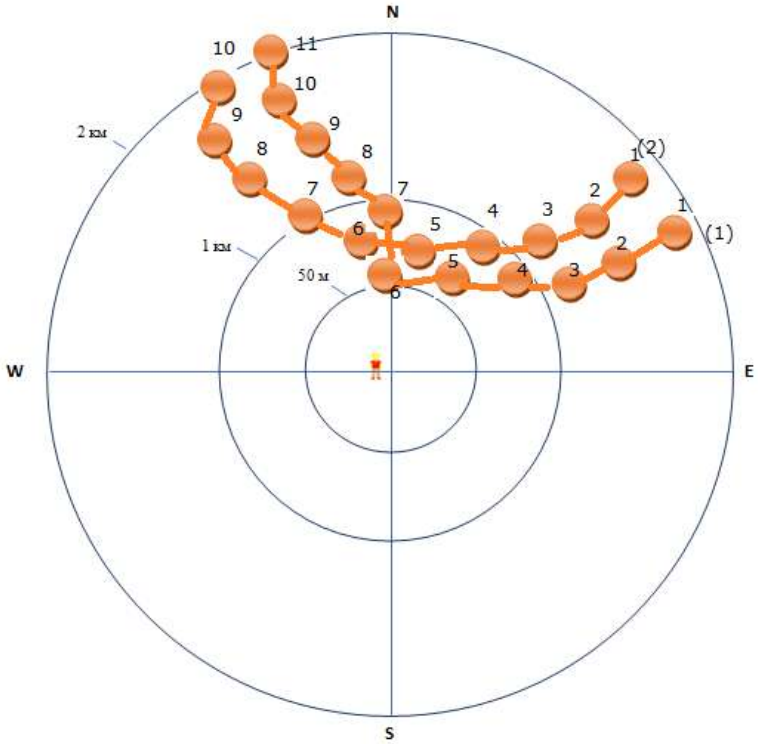


Fig. 38 Flight path (VP 6), 27.04.2021

Table 46 Target species log (VP 6), 27.04.2021

	Neophron percnopterus(1)	**13:56**	1 50m	2 50m	3 60m	4 65m	5 55m	6 55m	7 55m	8 55m	9 45m	10 45m	11 45m
	Neophron percnopterus(2)	**13:16**	1 60m	2 50m	3 50m	4 55m	5 55m	6 55m	7 50m	8 55m	9 45m	10 45m	

VP 10

Date: 28.04.2021. Start and end time: 8:31 – 11:32
Weather
The air temperature: start 9°C end 14°C half cloudy,
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 7

Date: 28.04.2021. Start and end time: 12:19 – 15:20
Weather:
The air temperature: start 22°C end 16°C half cloudy,
Wind speed approx. (5-6 m/s) No precipitation

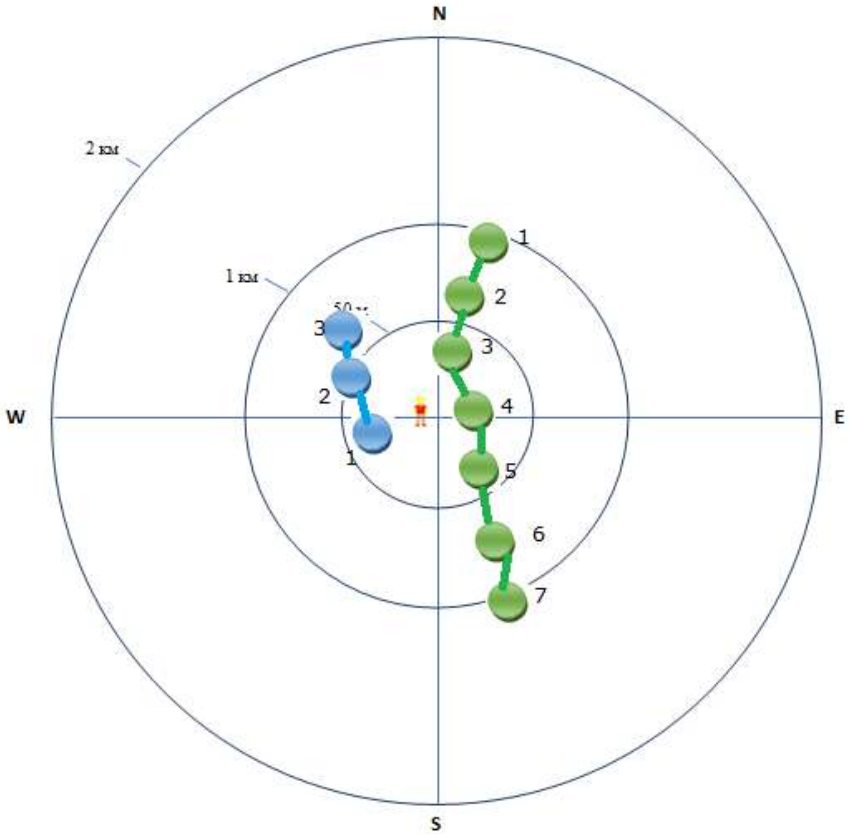


Fig. 39 Flight path (VP 7), 28.04.2021

Table 47 Target species log (VP 7), 28.04.2021

	Athene noctua (was sitting)	**13:56**	1 0m	2 10m	3 0m				
	Falco tinnunculus	**15:16**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 20m

VP 8

Date: 29.04.2021. Start and end time: 8:15 – 11:15
Weather:
The air temperature: start 9°C end 17°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 9

Date: 29.04.2021. Start and end time: 13:06 – 16:06
Weather:
The air temperature: start 23°C end 16°C cloudy,
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP.11

Date: 30.04.2021. Start and end time: 8:13 – 11:14
Weather:
The air temperature: start 11°C end 19°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

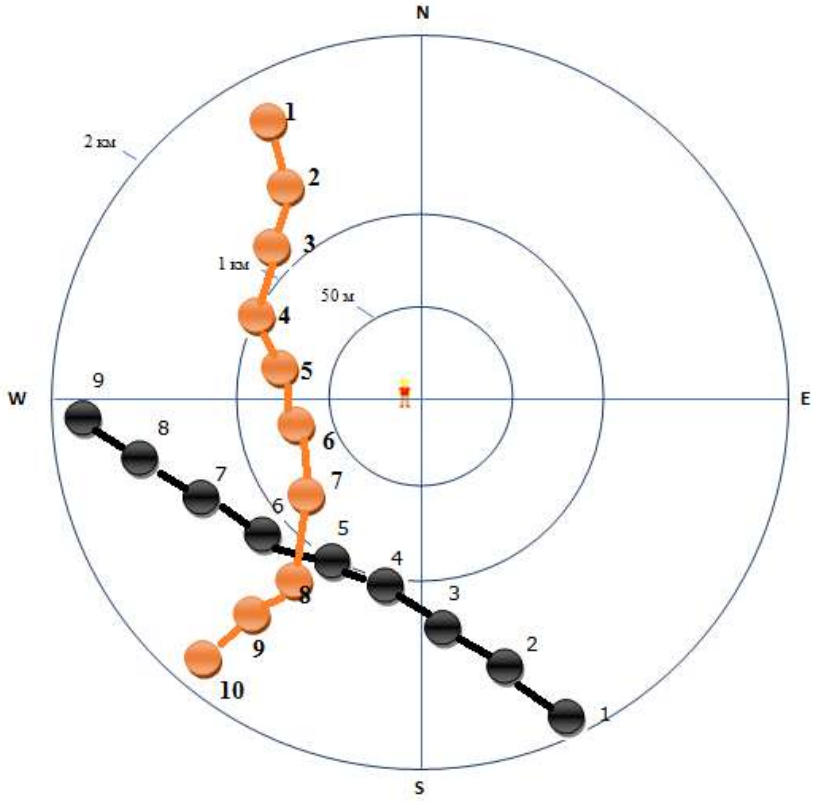


Fig. 40 Flight path (VP 11), 30.04.2021

Table 48 Target species log (VP 11), 30.04.2021

	Aquila nipalensis	**9:52**	1 120m	2 155m	3 125m	4 130m	5 130m	6 125m	7 125m	8 140m	9 140m	
	Neophron percnopterus	**10:56**	1 70m	2 65m	3 65m	4 60m	5 50m	6 75m	7 75m	8 70m	9 80m	10 80m

VP.12

Date: 30.04.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 24°C end 19°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

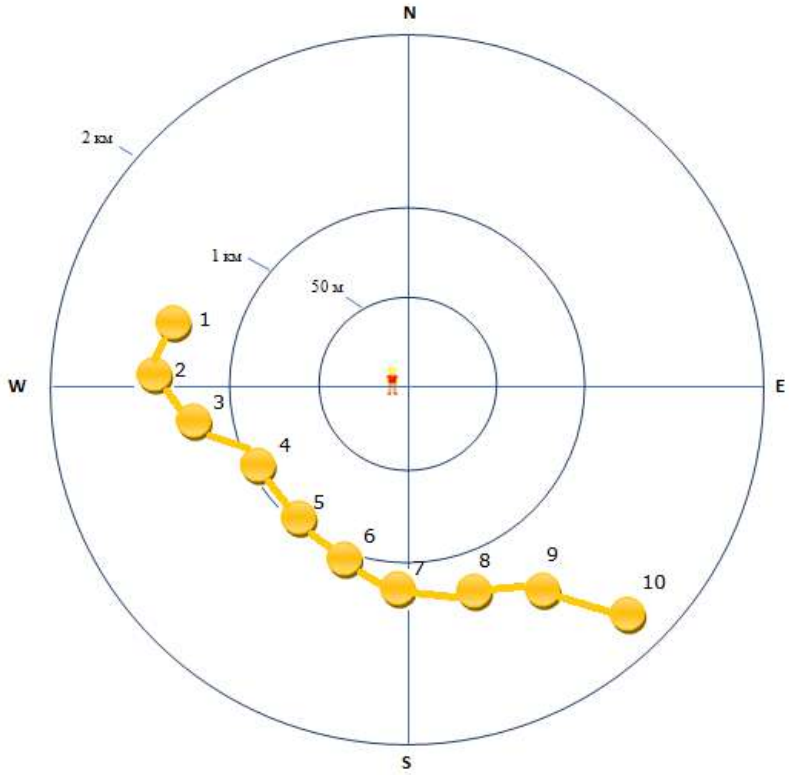


Fig. 41 Flight path (VP 12), 30.04.2021

Table 49 Target species log (VP 12), 30.04.2021

	Buteo rufinus	**15:27**	1 40m	2 65m	3 65m	4 60m	5 50m	6 45m	7 45m	8 40m	9 40m	10 40m

VP survey results in May

VP 1

Date: 02.05.2021. Start and end time: 7:36 –10:36
Weather:
The air temperature: start 9 °C end 12°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 2

Date: 02.05.2021. Start and end time: 11:12 – 14:12
Weather:
The air temperature: start 14°C end 26°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

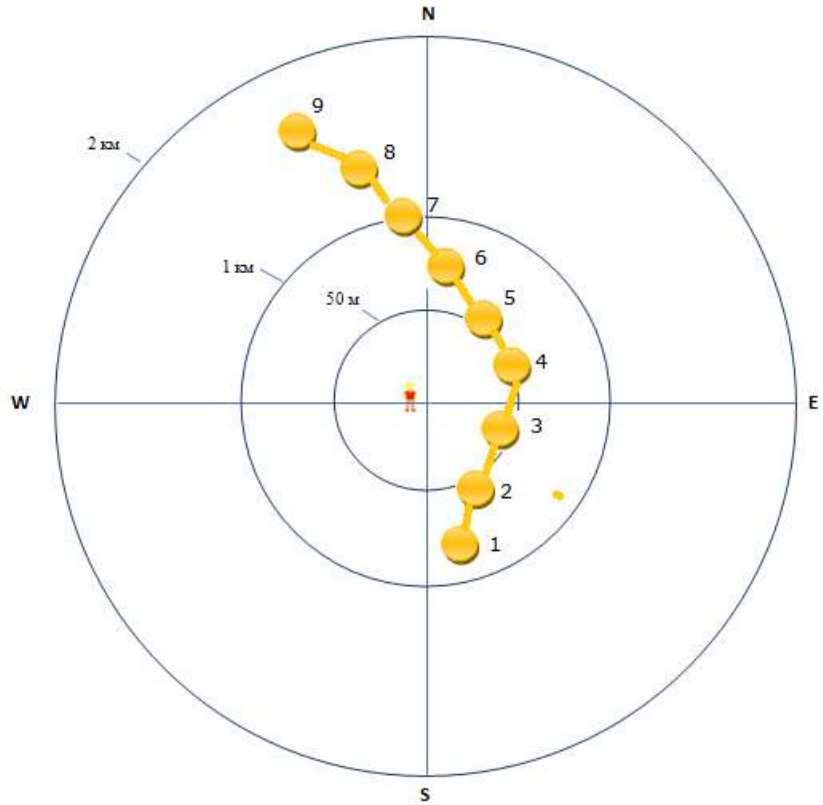


Fig. 42 Flight path (VP 2), 02.05.2021

Table 50 Target species log (VP 2), 02.05.2021

	Buteo rufinus	**12:28**	1 50m	2 60m	3 60m	4 65m	5 65m	6 50m	7 30m	8 30m	9 40m

VP 3

Date: 02.05.2021. Start and end time: 14:48 – 17:48
Weather:
The air temperature: start 25°C end 21°C is sunny
Wind speed approx. (4-5 m/s) No precipitation

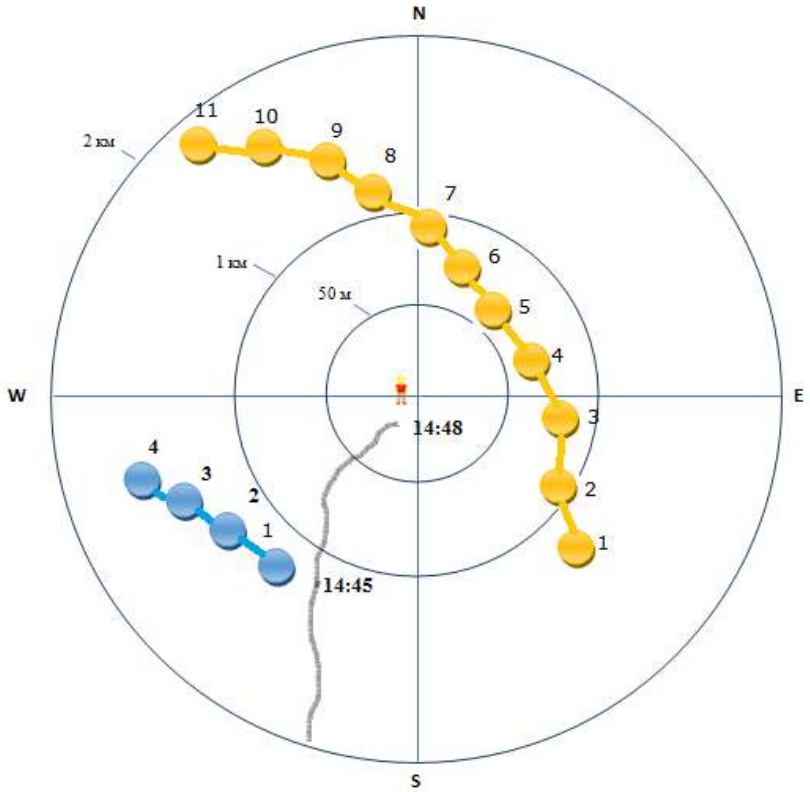


Fig. 43 Flight path (VP 3), 02.05.2021

Table 51 Target species log (VP 3), 02.05.2021

	Athene noctua (was sitting)	**14:45**	1 0m	2 5m	3 5m	4 0m							
	Buteo rufinus	**15:58**	1 30m	2 30m	3 20m	4 25m	5 25m	6 20m	7 20m	8 20m	9 10m	10 20m	11 20m

VP. 4

Date: 03.05.2021. Start and end time: 7:20 – 10:20
Weather:
The air temperature: start 9°C end 14°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation

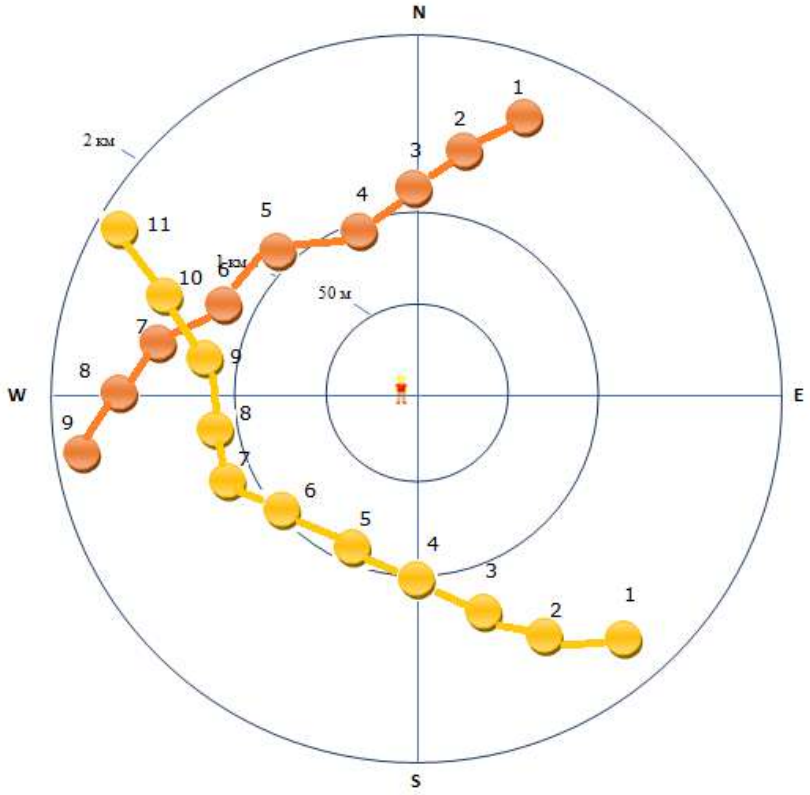


Fig. 44 Flight path (VP 4), 03.05.2021

Table 52 Target species log (VP 4), 03.05.2021

	Buteo rufinus	**9:58**	1 30m	2 30m	3 30m	4 35m	5 35m	6 30m	7 30m	8 30m	9 30m	10 30m	11 30m
	Neophron percnopterus	**10:16**	1 30m	2 50m	3 50m	4 45m	5 35m	6 40m	7 60m	8 60m	9 60m		

VP 5

Date: 03.05.2021. Start and end time: 11:08 – 14:08
Weather:
The air temperature: start 18°C end 26°C cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 6

Date: 03.05.2021. Start and end time: 14:52 – 17:52
Weather:
The air temperature: start 26°C end 19°C cloudy
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP.7

Date: 04.05.2021. Start and end time: 7:15 – 10:15
Weather:
The air temperature: start 9°C end 16°C cloudy
Wind speed approx. (5-6 m/s) No precipitation

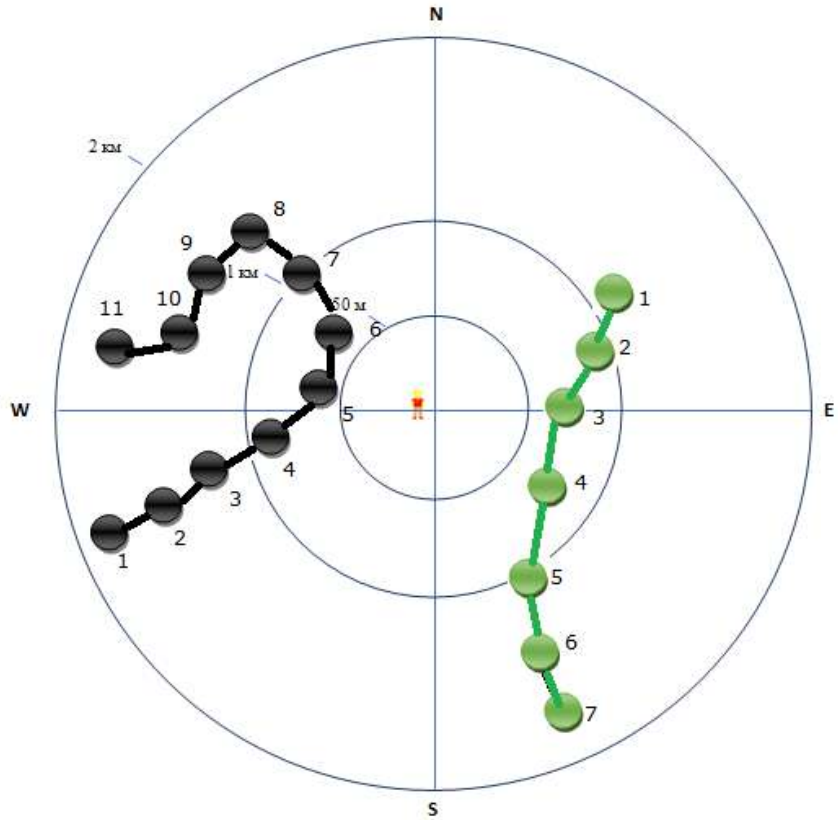


Fig. 45 Flight path (VP 7), 04.05.2021

Table 53 Target species log (VP 7), 04.05.2021

	Falco tinnunculus	**8:02**	1 15m	2 15m	3 10m	4 15m	5 15m	6 5m	7 5m				
	Aqula chrysaetos	**11:37**	1 165m	2 165m	3 160m	4 165m	5 165m	6 165m	7 165m	8 165m	9 165m	10 165m	11 165m

VP 10

Date: 04.05.2021. Start and end time: 10:56 – 13:56
Weather:
The air temperature: start 19°C end 26°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 8

Date: 04.05.2021. Start and end time: 14:38 – 17:38
Weather
The air temperature: start 25°C end 18°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 9

Date: 05.05.2021. Start and end time: 7:49 – 10:49
Weather:
The air temperature: start 10°C end 18°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation

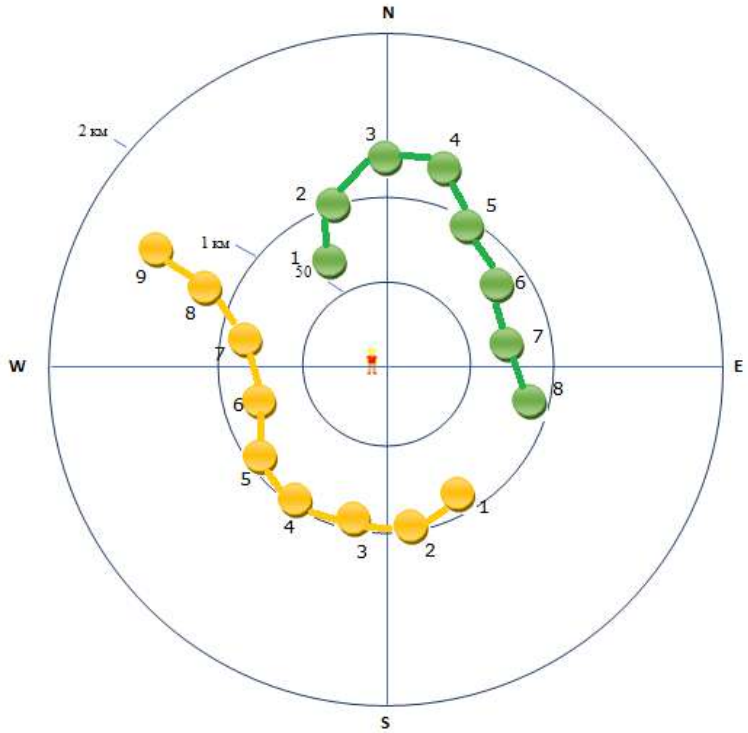


Fig. 46 Flight path (VP 9), 05.05.2021

Table 54 Target species log (VP 9), 05.05.2021

	Falco tinnunculus (was sitting)	**7:54**	1 0m	2 5m	3 10m	4 10m	5 10m	6 15m	7 10m	8 15m	
	Buteo rufinus	**9:56**	1 30m	2 30m	3 40m	4 55m	5 45m	6 45m	7 35m	8 35m	9 35m

VP 11

Date: 05.05.2021. Start and end time: 11:35 – 14:35
Weather:
The air temperature: start 25°C end 29°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 12

Date: 05.05.2021. Start and end time: 15:09 – 18:09
Weather:
The air temperature: start 23°C end 16°C partly cloudy
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 13

Date: 06.05.2021. Start and end time: 9:09 – 12:09
Weather:
The air temperature: start 12°C end 23°C partly cloudy
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.14

Date: 06.05.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 29°C end 21°C partly cloudy
Wind speed approx. (6-7 m/s) No precipitation

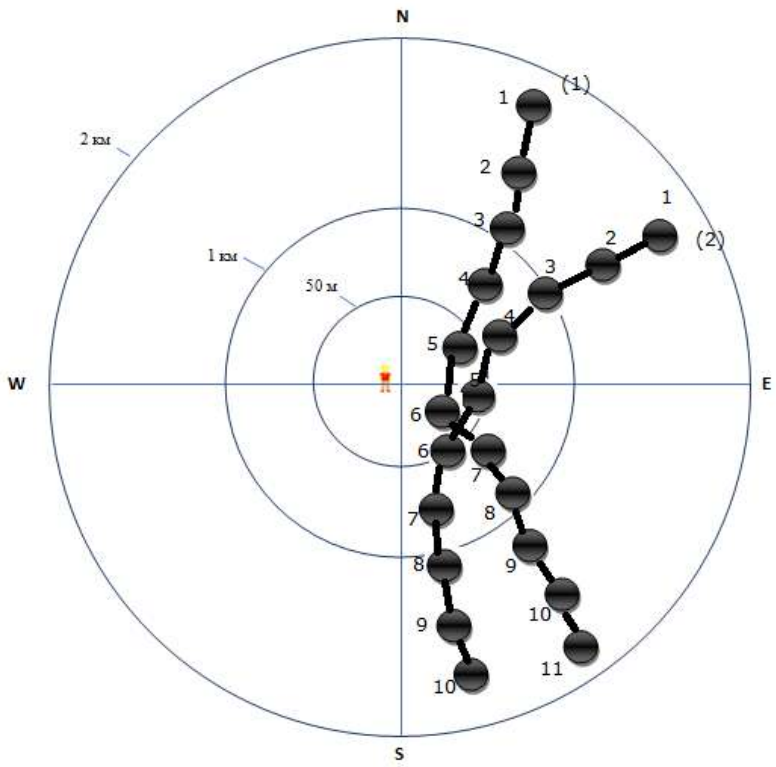


Fig. 47 Flight path (VP 14), 06.05.2021

Table 55 Target species log (VP 14), 06.05.2021

	Aquila chrysaetos(1)	**15:23**	1 130m	2 135m	3 135m	4 130m	5 130m	6 135m	7 135m	8 130m	9 130m	10 130m	11 130m
	Aquila chrysaetos(2)	**15:56**	1 170m	2 165m	3 165m	4 160m	5 150m	6 145m	7 145m	8 140m	9 140m	10 140m	

VP 1

Date: 07.05.2021. Start and end time: 7:26 –10:26
Weather:
The air temperature: start 11 °C end 23°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 2

Date: 07.05.2021. Start and end time: 11:08 – 14:08
Weather:
The air temperature: start 25°C end 28°C cloudy
Wind speed approx. (5-6 m/s) No precipitation

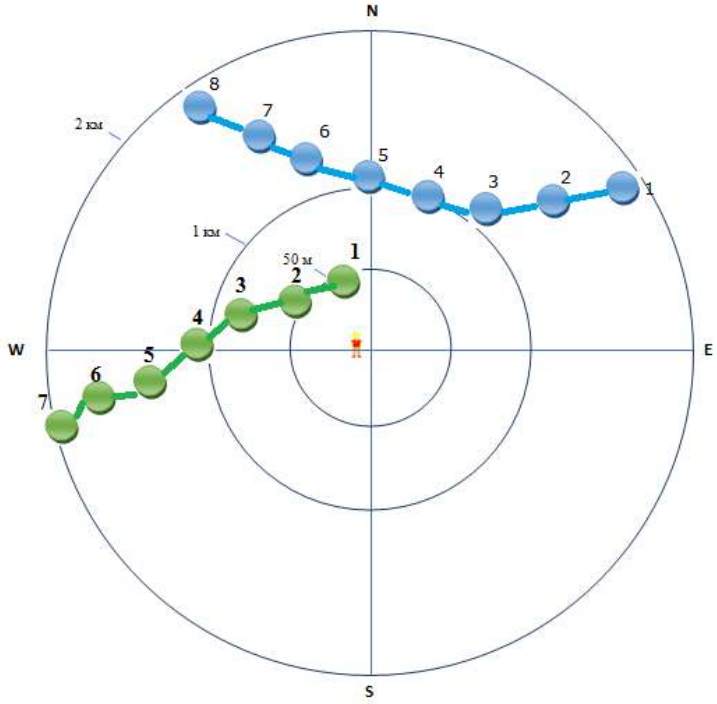


Fig. 48 Flight path (VP 2), 07.05.2021

Table 56 Target species log (VP 2), 07.05.2021

	Falco tinnunculus	**11:23**	1 10m	2 10m	3 10m	4 15m	5 15m	6 20m	7 20m	
	Aegypius monachus	**13:08**	1 190m	2 190m	3 190m	4 195m	5 195m	6 190m	7 190m	8 190m

VP 3

Date: 07.05.2021. Start and end time: 14:53 – 17:55
Weather:
The air temperature: start 27°C end 20°C cloudy
Wind speed approx. (3-5 m/s) No precipitation
Primary species not found

VP. 6

Date: 08.05.2021. Start and end time: 7:11 – 10:11
Weather:
The air temperature: start 10°C end 17°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 5

Date: 08.05.2021. Start and end time: 10:56 – 13:56
Weather:
The air temperature: start 18°C end 28°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

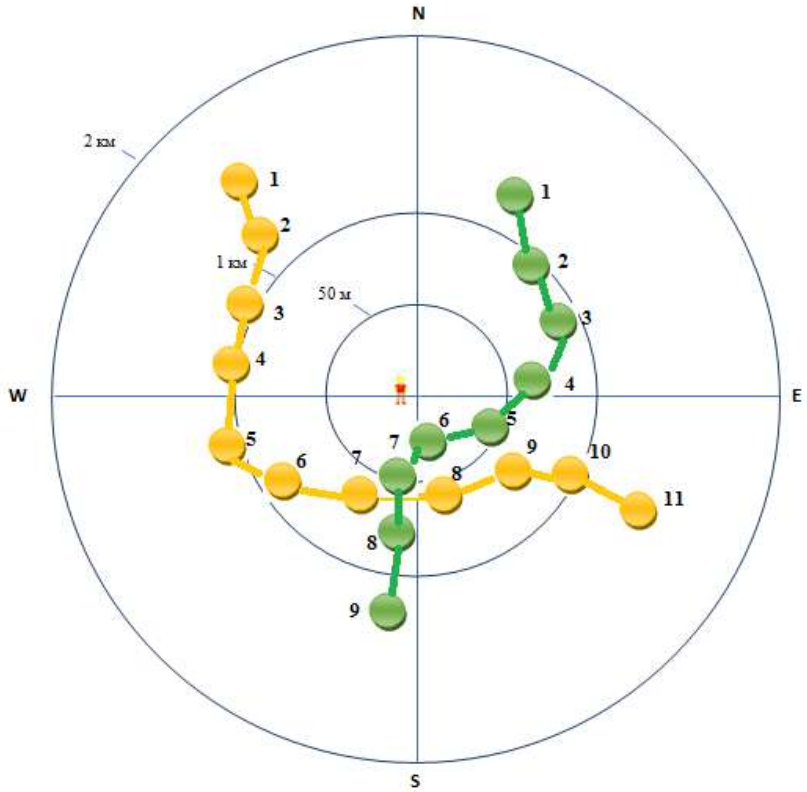


Fig. 49 Flight path (VP 5), 08.05.2021

Table 57 Target species log (VP 5), 08.05.2021

	Neophron percnopterus	**11:43**	1 60m	2 70m	3 70m	4 75m	5 75m	6 85m	7 85m	8 65m	9 65m	10 65m	11 65m
	Falco tinnunculus	**12:56**	1 10m	2 10m	3 20m	4 25m	5 25m	6 25m	7 15m	8 15m	9 15m		

VP 4

Date: 08.05.2021. Start and end time: 14:38 – 17:39
Weather:
The air temperature: start 26°C end 20°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

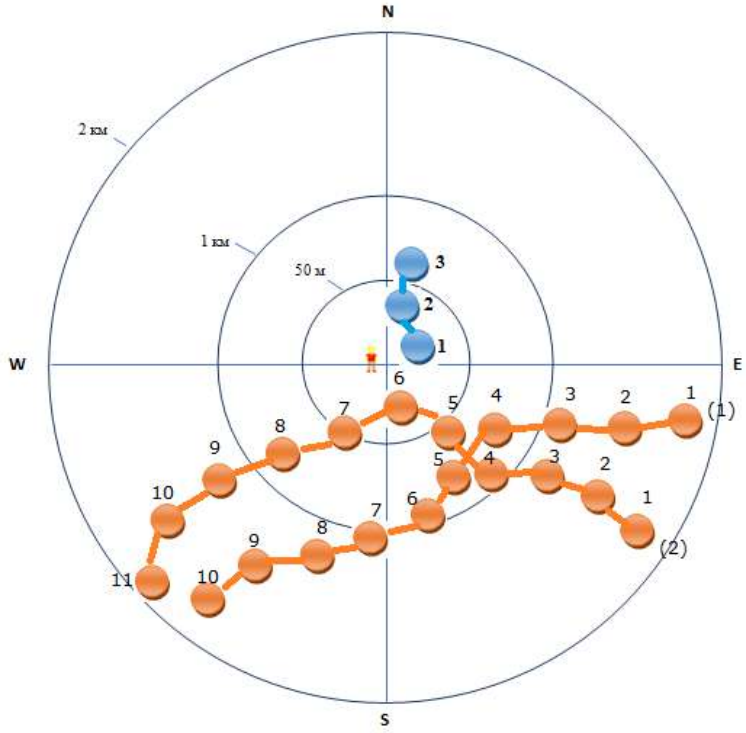


Fig. 50 Flight path (VP 4), 08.05.2021

Table 58 Target species log (VP 4), 08.05.2021

	Athene noctua (was sitting)	**14:40**	1 0m	2 5m	3 0m								
	Buteo rufinus (1)	**14:02**	1 50m	2 50m	3 50m	4 55m	5 55m	6 55m	7 55m	8 45m	9 45m	10 45m	
	Buteo rufinus (2)	**14:08**	1 55m	2 55m	3 50m	4 55m	5 55m	6 55m	7 55m	8 55m	9 55m	10 55m	11 55m

VP 10

Date: 10.05.2021. Start and end time: 7:23 – 10:23
Weather:
The air temperature: start 10°C end 18°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

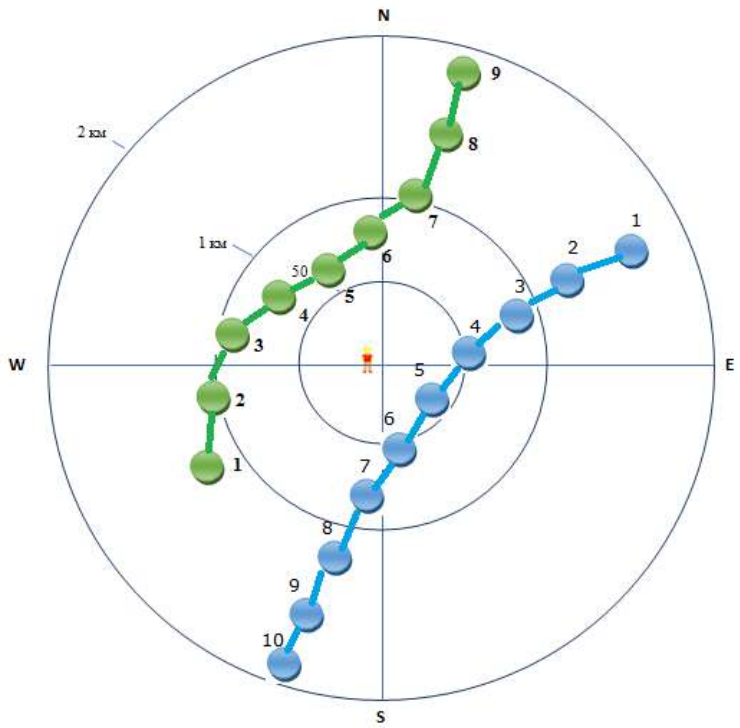


Fig. 51 Flight path (VP 10), 10.05.2021

Table 59 Target species log (VP 10), 10.05.2021

	Gyps fulvus	**9:47**	1 210m	2 210m	3 210m	4 210m	5 210m	6 210m	7 200m	8 210m	9 200m	
	Aqula chrysaetos	**9:48**	1 190m	2 190m	3 190m	4 195m	5 195m	6 195m	7 190m	8 195m	9 195m	10 195m

VP 7

Date: 10.05.2021. Start and end time: 11:09 – 14:10
Weather
The air temperature: start 21°C end 29°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 8

Date: 10.05.2021. Start and end time: 14:49 – 17:52
Weather:
The air temperature: start 26°C end 21°C is sunny,
Wind speed approx. (5-6 m/s) No precipitation

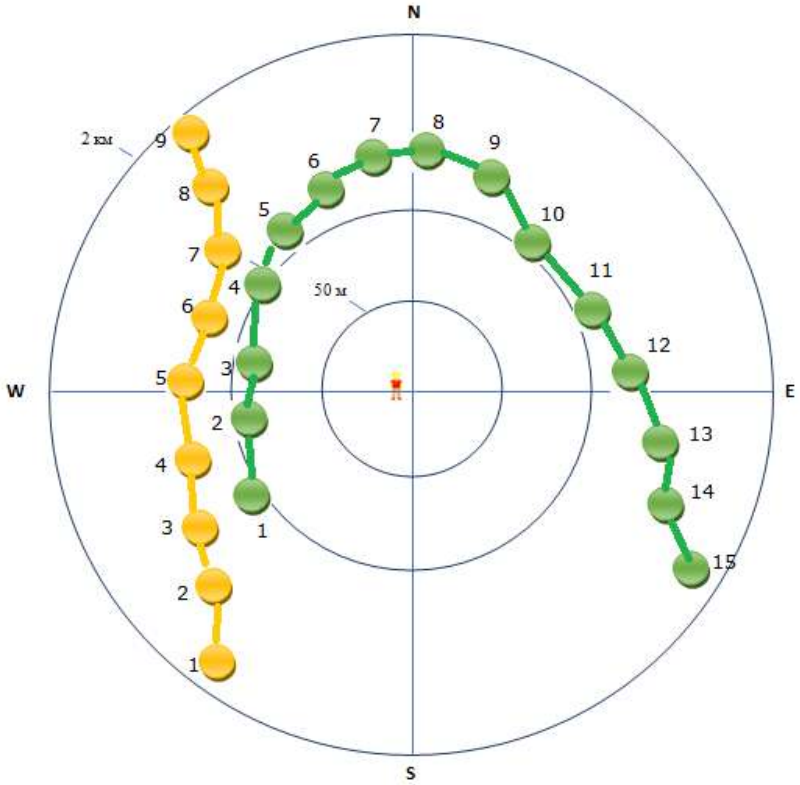


Fig. 52 Flight path (VP 8), 10.05.2021

Table 60 Target species log (VP 8), 10.05.2021

	Circus cyaneus	**10:56**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 15m	8 20m	9 10m						
	Gyps fulvus	**11:16**	1 220m	2 210m	3 220m	4 215m	5 215m	6 225m	7 220m	8 225m	9 225m	10 220m	11 210m	12 220m	13 215m	14 215m	15 225m

VP.12

Date: 11.05.2021. Start and end time: 7:23 – 10:23
Weather:
The air temperature: start 9°C end 18°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

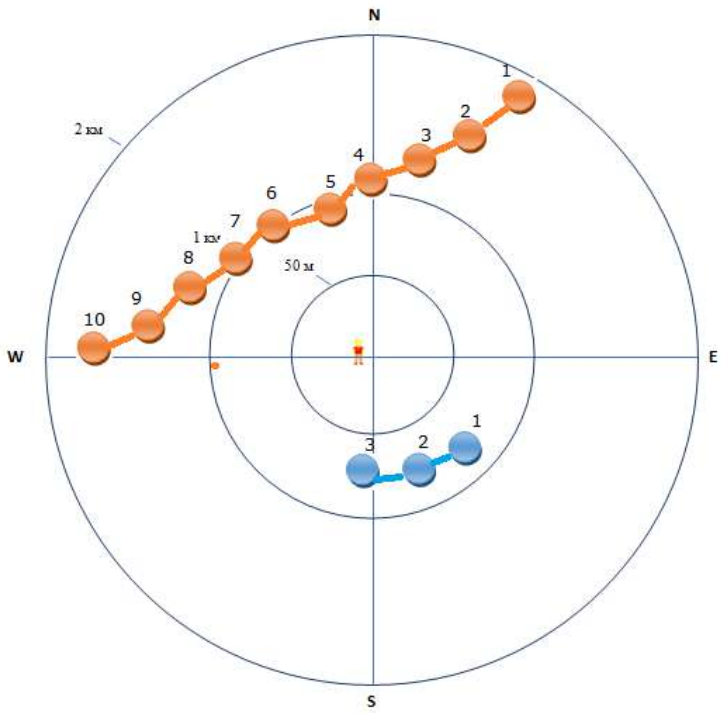


Fig. 53 Flight path (VP 12), 11.05.2021

Table 61 Target species log (VP 12), 11.05.2021

	Athene noctua (was sitting)	**9:02**	1 0m	2 5m	3 0m							
	Gypaetus barbatus	**10:12**	1 170m	2 165m	3 165m	4 160m	5 150m	6 150m	7 150m	8 150m	9 150m	10 150m

VP 11

Date: 11.05.2021. Start and end time: 11:06 –14:06
Weather:
The air temperature: start 23°C end 29°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 9

Date: 11.05.2021. Start and end time: 14:49 – 17:52
Weather:
The air temperature: start 28°C end 21°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 13

Date: 12.05.2021. Start and end time: 8:12 – 11:15
Weather:
The air temperature: start 11°C end 20°C cloudy,
Wind speed approx. (4-5 m/s) No precipitation

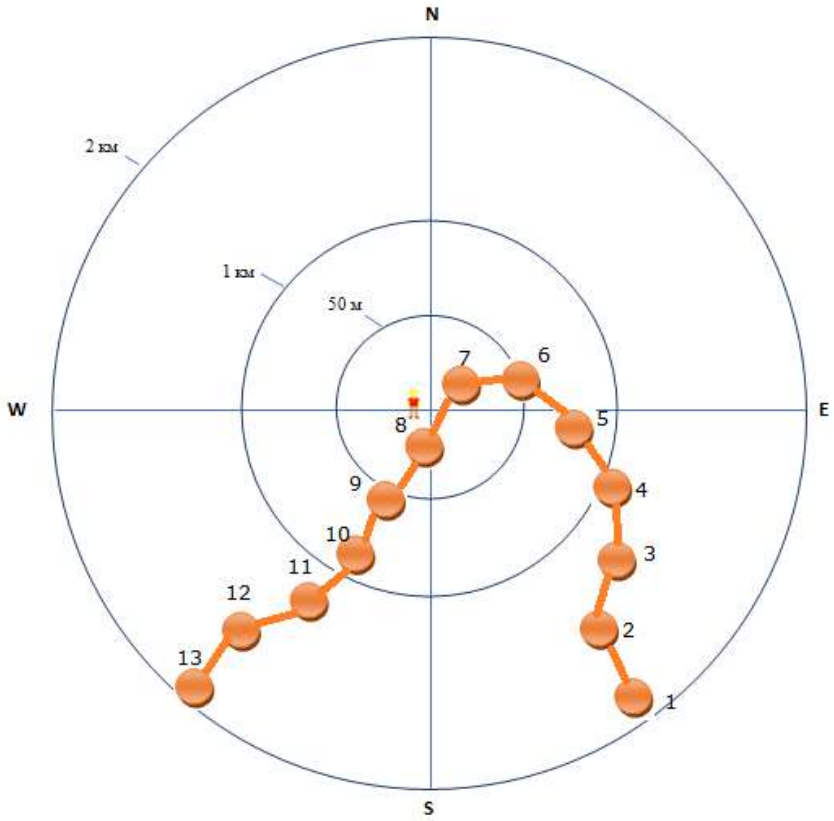


Fig. 54 Flight path (VP 13), 12.05.2021

Table 62 Target species log (VP 13), 12.05.2021

	Neophron percnopterus	**10:46**	1 160m	2 160m	3 160m	4 165m	5 165m	6 150m	7 150m	8 160m	9 140m	10 140m	11 140m	12 140m	13 140m

VP 14

Date: 12.05.2021. Start and end time: 13:23 – 16:23
Weather:
The air temperature: start 29°C end 23°C cloudy,
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 1

Date: 13.05.2021. Start and end time: 7:17 – 10:18
Weather:
The air temperature: start 9°C end 18°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 2

Date: 13.05.2021. Start and end time: 10:58 – 13:58
Weather:
The air temperature: start 23°C end 29°C cloudy,
Wind speed approx. (4-5 m/s) No precipitation

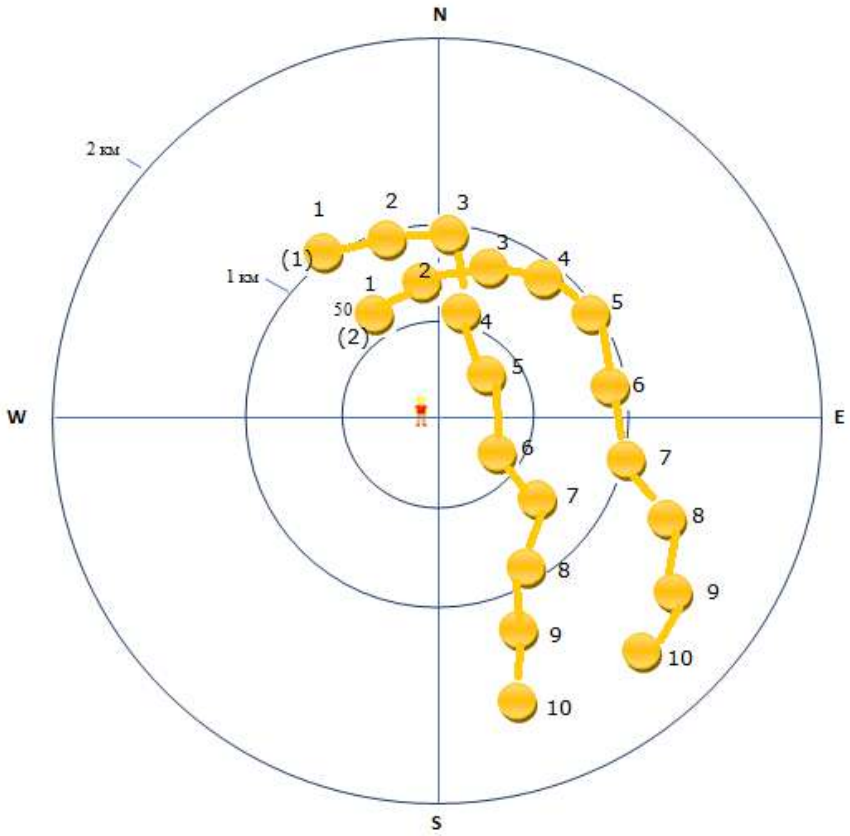


Fig. 55 Flight path (VP 2), 13.05.2021

Table 63 Target species log (VP 2), 13.05.2021

	Buteo rufinus(2) (is sitting)	**11:03**	1 0m	2 20m	3 20m	4 25m	5 25m	6 40m	7 50m	8 60m	9 60m	10 60m
	Buteo rufinus(1)	**13:23**	1 30m	2 30m	3 20m	4 25m	5 25m	6 40m	7 50m	8 60m	9 60m	10 60m

VP 3

Date: 13.05.2021. Start and end time: 14:46 –17:46
Weather:
The air temperature: start 26°C end 23°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 6

Date: 14.05.2021. Start and end time: 7:28 – 10:28
Weather:
The air temperature: start 9°C end 18°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

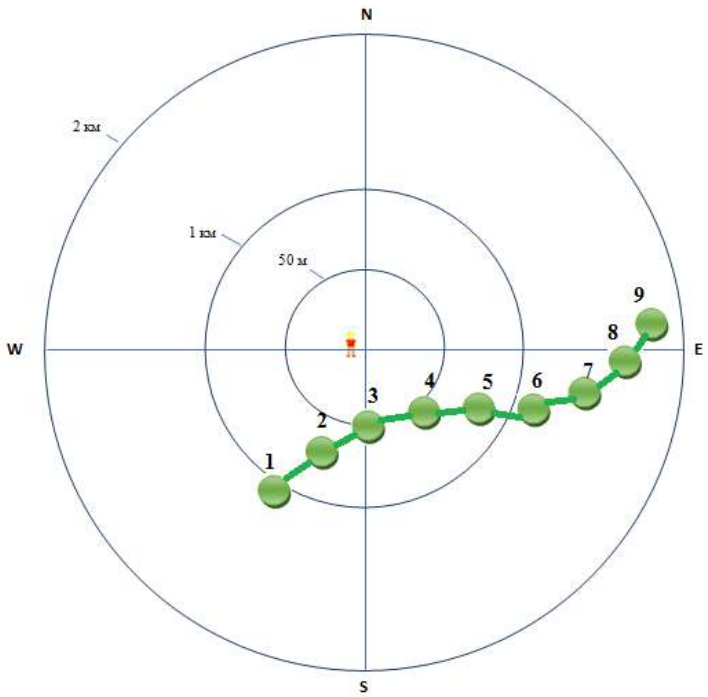


Fig. 56 Flight path (VP 6), 14.05.2021

Table 64 Target species log (VP 6), 14.05.2021

	Falco tinnunculus	**9:34**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 15m	8 15m	9 15m

VP 5

Date: 14.05.2021. Start and end time: 11:12 – 13:12
Weather:
The air temperature: start 26°C end 29°C is sunny
Wind speed approx. (5-7 m/s) No precipitation
Primary species not found

VP 4

Date: 14.05.2021. Start and end time: 13:57 – 17:57
Weather:
The air temperature: start 29°C end 23°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 7

Date: 15.05.2021. Start and end time: 7:13 – 10:13
Weather:
The air temperature: start 10°C end 19°C is sunny
Wind speed approx. (5-7 m/s) No precipitation

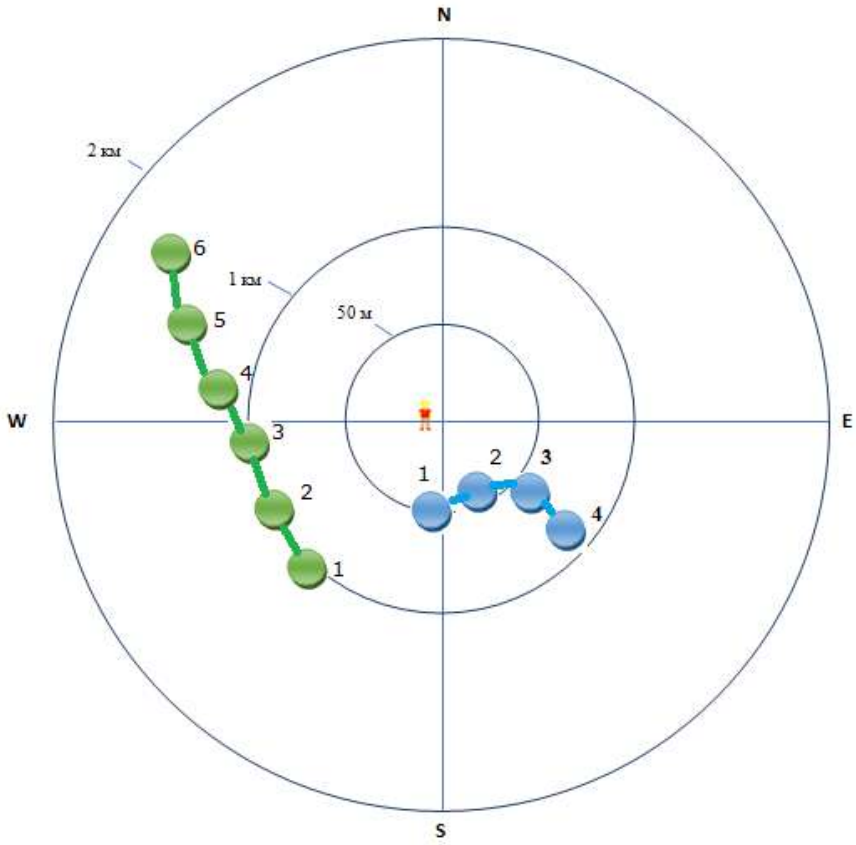


Fig. 57 Flight path (VP 7), 15.05.2021

Table 65 Target species log (VP 7), 15.05.2021

	Athene noctua (was sitting)	**14:47**	1 0m	2 5m	3 5m	4 0m		
	Falco cherrug	**15:21**	1 10m	2 10m	3 10m	4 15m	5 15m	6 10m

VP 10

Date: 15.05.2021. Start and end time: 10:55 – 13:56
Weather:
The air temperature: start 19°C end 29°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

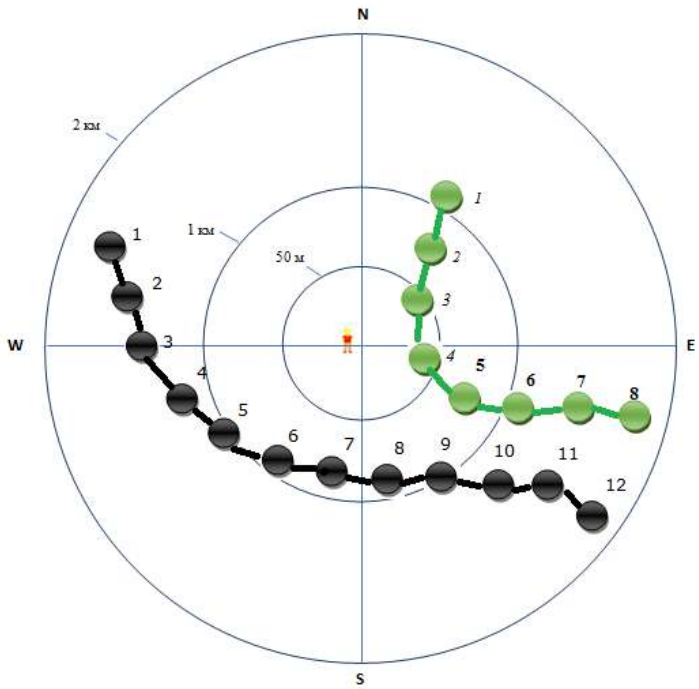


Fig. 58 Flight path (VP 10), 15.05.2021

Table 66 Target species log (VP 10), 15.05.2021

	Falco tinnunculus	**12:32**	1 10m	2 10m	3 10m	4 15m	5 15m	6 15m	7 15m	8 15m				
	Aquila chrysaetos	**13:16**	1 160m	2 160m	3 160m	4 165m	5 165m	6 165m	7 160m	8 165m	9 165m	10 165m	11 165m	12 165 m

VP 8

Date: 15.05.2021. Start and end time: 14:39 – 17:39
Weather:
The air temperature: start 25°C end 21°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 9

Date: 16.05.2021. Start and end time: 7:29 – 10:29
Weather:
The air temperature: start 9°C end 18°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.11

Date: 16.05.2021. Start and end time: 11:02–13:02
Weather:
The air temperature: start 23°C end 29°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

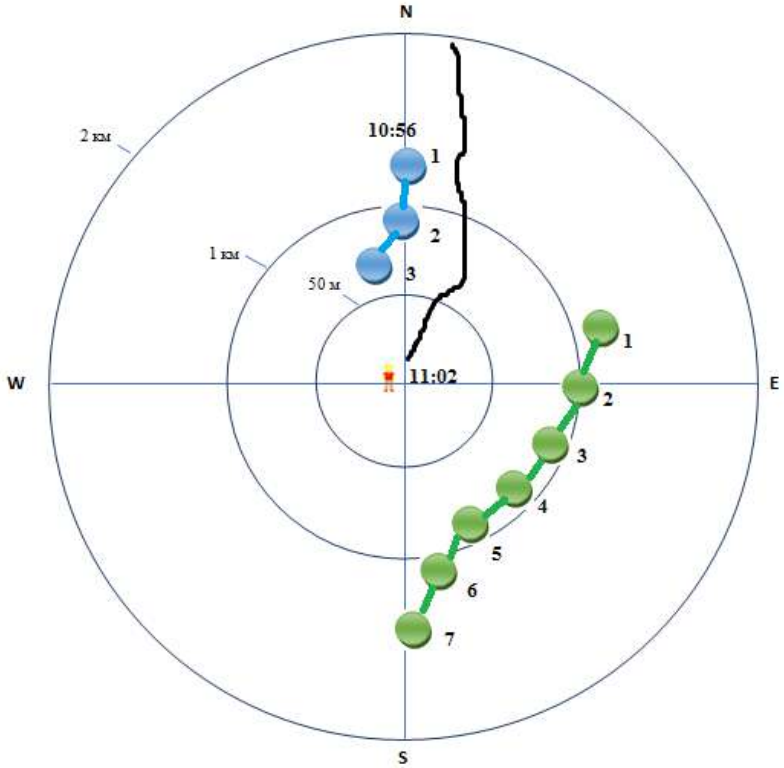


Fig. 59 Flight path (VP 11), 16.05.2021

Table 67 Target species log (VP 11), 16.05.2021

	Athene noctua (was sitting)	**10:56**	1 0m	2 5m	3 0m				
	Falco tinnunculus	**12:45**	1 10m	2 5m	3 5m	4 10m	5 10m	6 15m	7 15m

VP 12

Date: 16.05.2021. Start and end time: 13:46 –17:46
Weather:
The air temperature: start 29 °C end 23°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 13

Date: 17.05.2021. Start and end time: 7:34 –10:34
Weather:
The air temperature: start 9°C end 16°C partly cloudy
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 14

Date: 17.05.2021. Start and end time: 13:02 – 16:05
Weather:
The air temperature: start 27°C end 23°C partly cloudy
Wind speed approx. (4-5 m/s) No precipitation

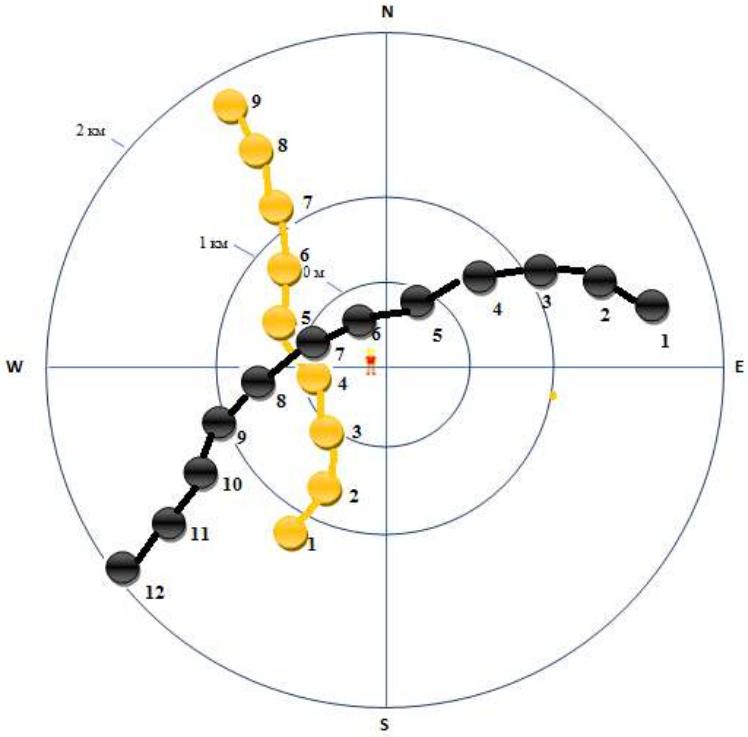


Fig. 60 Flight path (VP 14), 17.05.2021

Table 68 Target species log (VP 14), 17.05.2021

	Circus cyaneus	**14:21**	1 20m	2 30m	3 30m	4 25m	5 25m	6 30m	7 20m	8 20m	9 20m			
	Aquila chrysaetos	**15:53**	1 180m	2 180m	3 160m	4 175m	5 175m	6 750m	7 170m	8 180m	9 180m	10 160m	11 160m	12 160m

VP 1

Date: 19.05.2021. Start and end time: 7:38 – 10:38
Weather:
The air temperature: start 10°C end 19°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

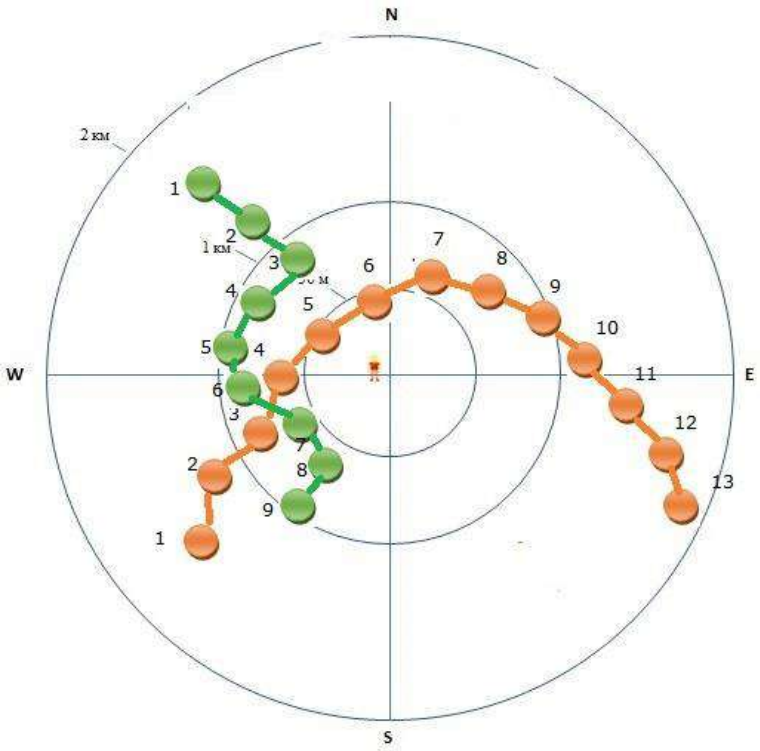


Fig. 61 Flight path (VP 1), 19.05.2021

Table 69 Target species log (VP 1), 19.05.2021

	Buteo buteo	**8:21**	1 20m	2 20m	3 20m	4 35m	5 35m	6 35m	7 40m	8 45m	9 45m	10 35m	11 25m	12 25m	13 25m
	Falco tinnunculus	**10:24**	1 10m	2 10m	3 20m	4 15m	5 15m	6 15m	7 10m	8 10m	9 5m				

VP 2

Date: 19.05.2021. Start and end time: 11:09 – 14:09
Weather:
The air temperature: start 23°C end 27°C is sunny
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP 3

Date: 19.05.2021. Start and end time: 14:49 – 17:52
Weather:
The air temperature: start 25°C end 21°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 4

Date: 20.05.2021. Start and end time: 7:24 – 10:24
Weather:
The air temperature: start 9°C end 7°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

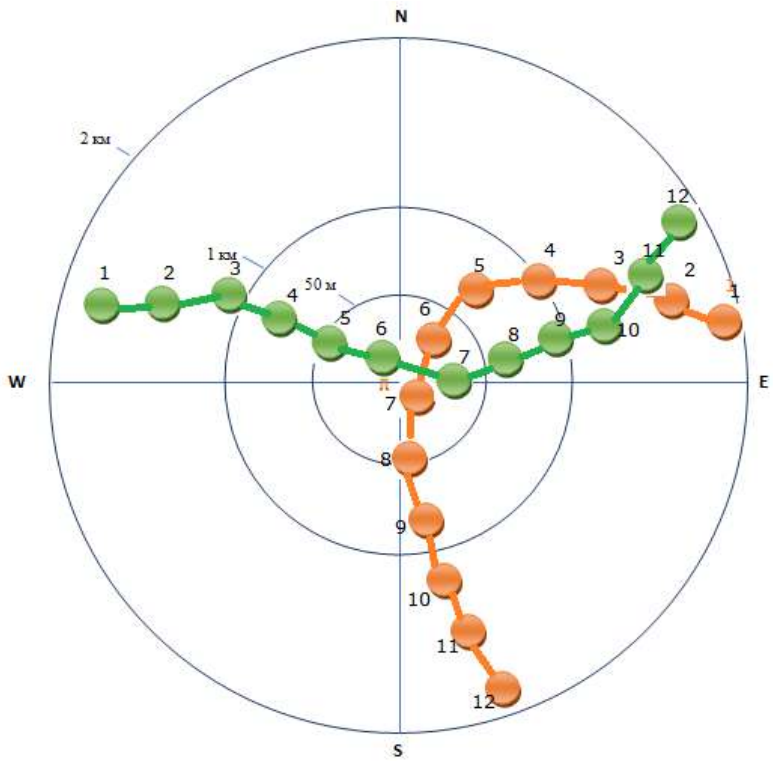


Fig. 62 Flight path (VP 4), 20.05.2021

Table 70 Target species log (VP 4), 20.05.2021

	Neophron percnopterus	**8:56**	1 50m	2 50m	3 60m	4 65m	5 55m	6 55m	7 55m	8 55m	9 145m	10 145m	11 145m	12 145m
	Buteo rufinus	**9:16**	1 50m	2 50m	3 60m	4 65m	5 55m	6 55m	7 55m	8 55m	9 45m	10 45m	11 45m	12 45m

VP 5

Date: 20.05.2021. Start and end time: 11:06 – 14:06
Weather
The air temperature: start 23°C end 27°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 6

Date: 20.05.2021. Start and end time: 14:47 – 17:47
Weather:
The air temperature: start 27°C end 22°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

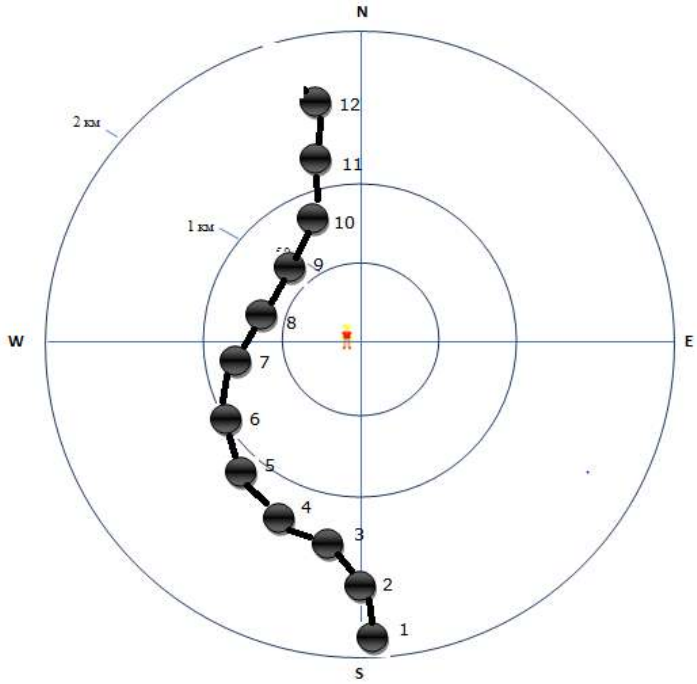


Fig. 63 Flight path (VP 6), 20.05.2021

Table 71 Target species log (VP 6), 20.05.2021

	Aquila chrysaetos	**15:16**	1 170 m	2 170m	3 170m	4 175m	5 175m	6 175m	7 180m	8 185m	9 185m	10 180m	11 185m	12 185m

VP 7

Date: 21.05.2021. Start and end time: 7:15 – 10:15
Weather:
The air temperature: start 10°C end 18°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 10

Date: 21.05.2021. Start and end time: 10:57 – 13:57
Weather:
The air temperature: start 23°C end 27°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation

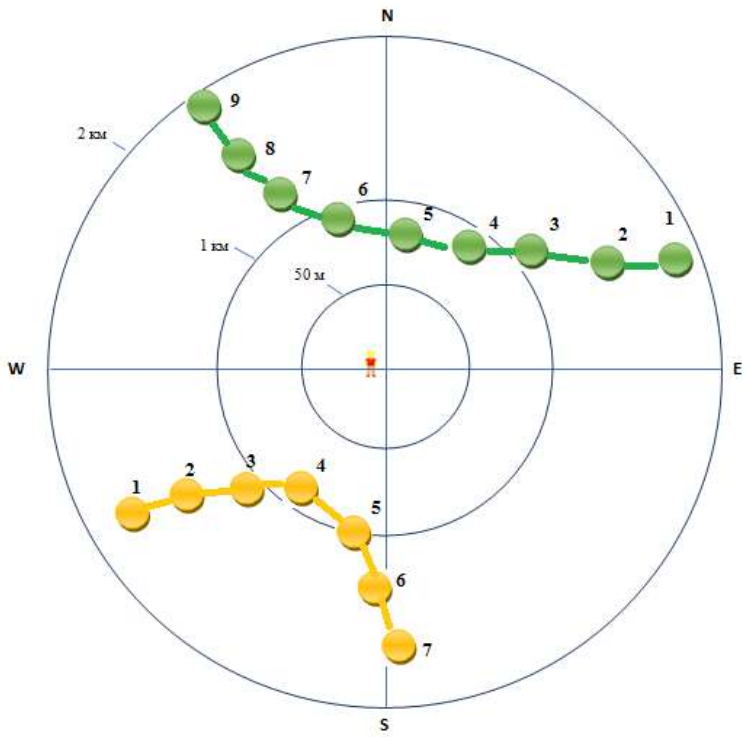


Fig. 64 Flight path (VP 10), 21.05.2021

Table 72 Target species log (VP 10), 21.05.2021

	Gyps fulvus	**11:52**	1 220m	2 220m	3 220m	4 220m	5 220m	6 220m	7 220m	8 220m	9 220m
	Neophron percnopterus	**13:32**	1 170m	2 165m	3 165m	4 160m	5 150m	6 175m	7 175m		

VP 12

Date: 21.05.2021. Start and end time: 14:37 – 17:37
Weather:
The air temperature: start 25°C end 18°C cloudy,
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 8

Date: 22.05.2021. Start and end time: 7:32 – 10:32
Weather:
The air temperature: start 9°C end 17°C cloudy,
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 11

Date: 22.05.2021. Start and end time: 11:08 – 14:08
Weather:
The air temperature: start 23°C end 29°C cloudy,
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP.9

Date: 22.05.2021. Start and end time: 14:52 – 17:52
Weather:
The air temperature: start 25°C end 19°C cloudy,
Wind speed approx. (5-6 m/s) No precipitation

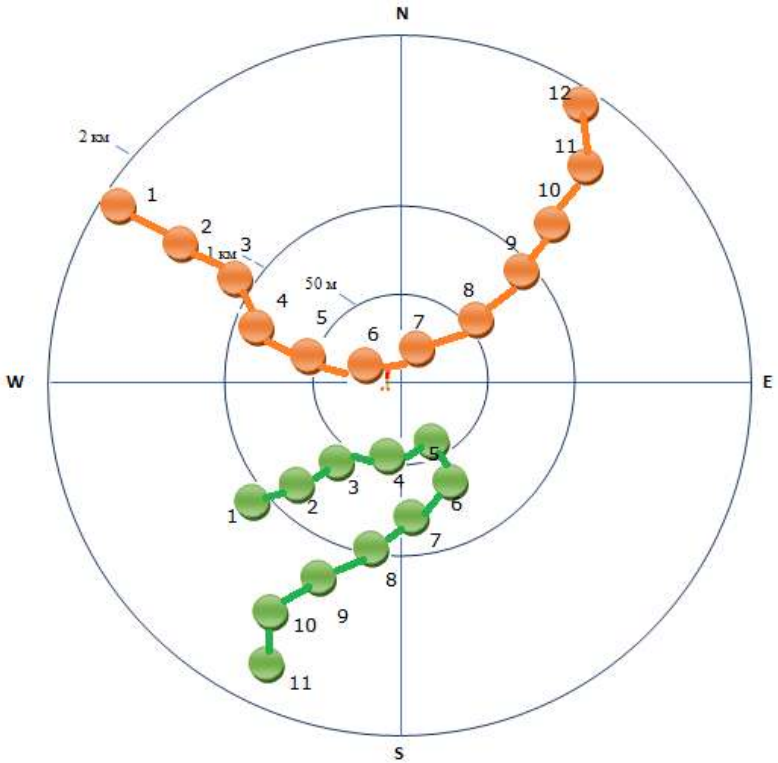


Fig. 65 Flight path (VP 9), 22.05.2021

Table 73 Target species log (VP 9), 22.05.2021

	Falco cherrug	**15:35**	1 10m	2 15m	3 15m	4 20m	5 20m	6 25m	7 25m	8 20m	9 20m	10 10m	11 10m	
	Circus cyaneus	**17:44**	1 20m	2 25m	3 25m	4 20m	5 10m	6 55m	7 25m	8 20m	9 10m	10 10m	11 10m	12 10m

VP 13

Date: 23.05.2021. Start and end time: 8:46 –11:46
Weather:
The air temperature: start 12°C end 18°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP.14

Date: 23.05.2021. Start and end time: 13:13 – 16:14
Weather:
The air temperature: start 28°C end 21°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

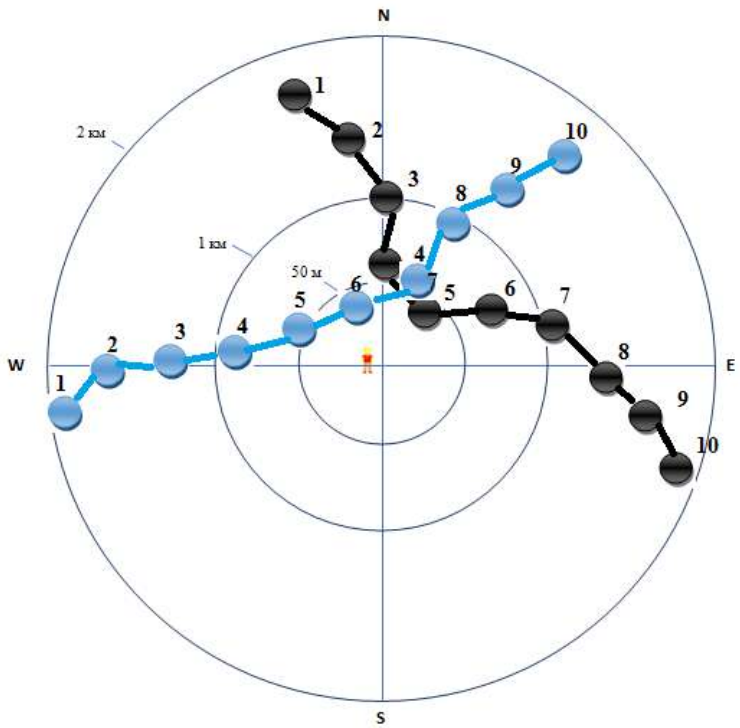


Fig. 66 Flight path (VP 14), 23.05.2021

Table 74 Target species log (VP 14), 23.05.2021

	Aquila chrysaetos	**15:27**	1 140m	2 165m	3 165m	4 160m	5 150m	6 145m	7 145m	8 140m	9 140m	10 140m
	Aegypius monachus	**15:48**	1 180m	2 185m	3 185m	4 180m	5 180m	6 185m	7 185m	8 180m	9 180m	10 180m

VP 1

Date: 24.05.2021. Start and end time: 7:09 – 10:09
Weather:
The air temperature: start 10°C end 18°C is sunny
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP 2

Date: 24.05.2021. Start and end time: 10:52 – 13:52
Weather:
The air temperature: start 23°C end 29°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 3

Date: 24.05.2021. Start and end time: 14:42 – 17:42
Weather:
The air temperature: start 9°C end 7°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

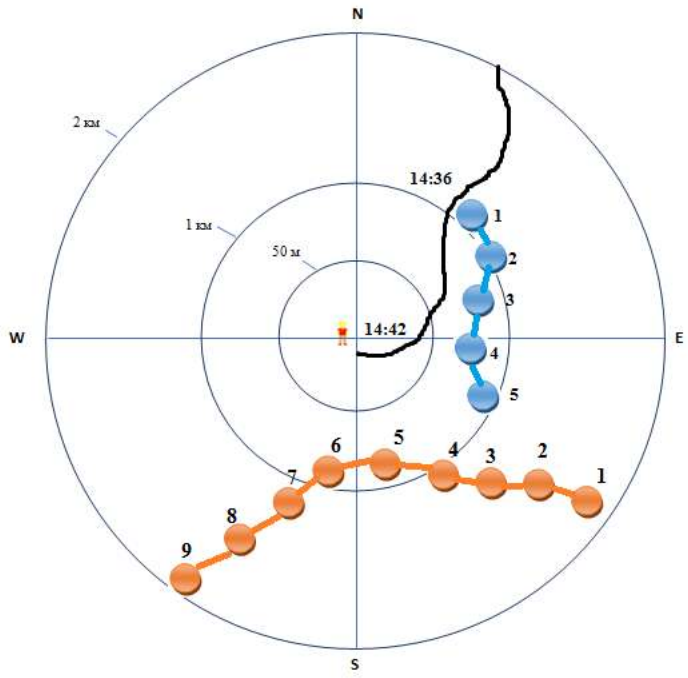


Fig. 67 Flight path (VP 3), 24.05.2021

Table 75 Target species log (VP 3), 24.05.2021

	Asio otus (was sitting)	**14:36**	1 0m	2 10m	3 10m	4 15m	5 15m				
	Buteo rufinus	**15:16**	1 50m	2 50m	3 60m	4 65m	5 55m	6 55m	7 55m	8 55m	9 45m

VP 6

Date: 25.05.2021. Start and end time: 7:16 – 10:16
Weather
The air temperature: start 9°C end 18°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 4

Date: 25.05.2021. Start and end time: 10:57 – 13:57
Weather:
The air temperature: start 23°C end 29°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

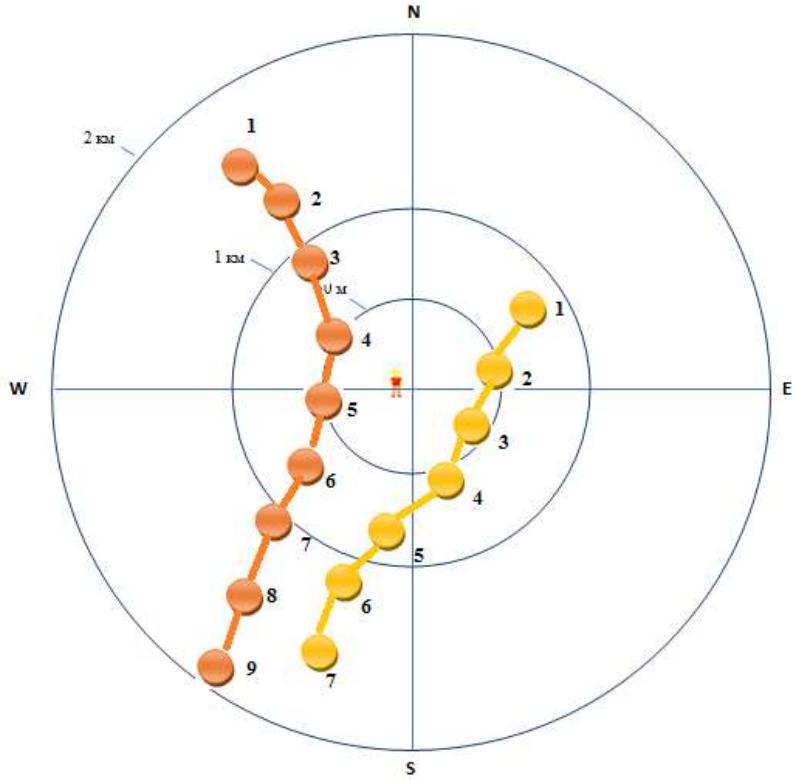


Fig. 68 Flight path (VP 4), 25.05.2021

Table 76 Target species log (VP 4), 25.05.2021

	Buteo buteo (was sitting)	**11:17**	1 0m	2 20m	3 30m	4 45m	5 45m	6 45m	7 50m		
	Neophron percnopterus	**12:28**	1 170m	2 170m	3 170m	4 175m	5 175m	6 175m	7 180m	8 185m	9 185m

VP 5

Date: 25.05.2021. Start and end time: 14:35 – 17:35
Weather:
The air temperature: start 26°C end 21°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 7

Date: 27.05.2021. Start and end time: 7:27 – 10:27
Weather:
The air temperature: start 10°C end 20°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

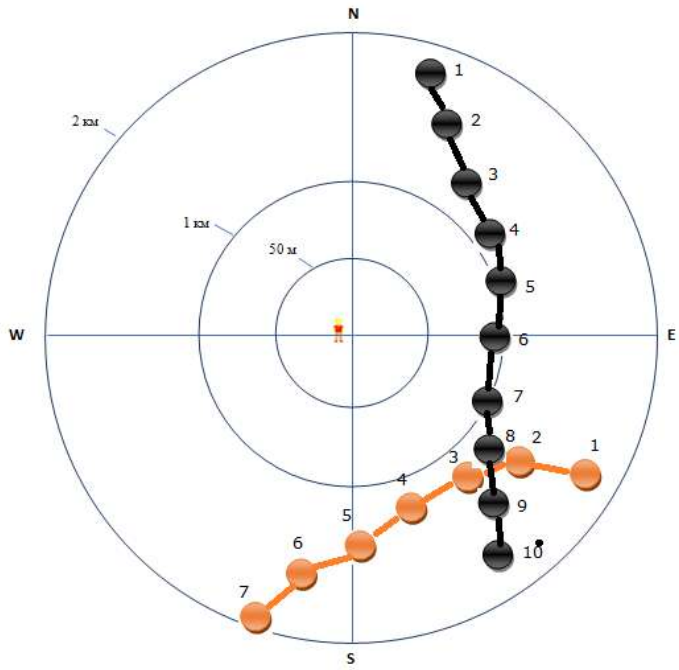


Fig. 69 Flight path (VP 7), 27.05.2021

Table 77 Target species log (VP 7), 27.05.2021

	Neophron percnopterus	**8:32**	1 120m	2 125m	3 125m	4 120m	5 120m	6 125m	7 125m			
	Aquila chrysaetos	**9:51**	1 90m	2 100m	3 100m	4 120m	5 120m	6 130m	7 130m	8 140m	9 140m	10 140m

VP 10

Date: 27.05.2021. Start and end time: 11:17 – 14:17
Weather:
The air temperature: start 23°C end 32°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 12

Date: 27.05.2021. Start and end time: 14:59 – 17:59
Weather:
The air temperature: start 29°C end 22°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 13

Date: 28.05.2021. Start and end time: 8:05 – 11:05
Weather:
The air temperature: start 12°C end 21°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 14

Date: 28.05.2021. Start and end time: 13:52 – 16:52
Weather:
The air temperature: start 32°C end 26°C is sunny
Wind speed approx. (5-6 m/s) No precipitation

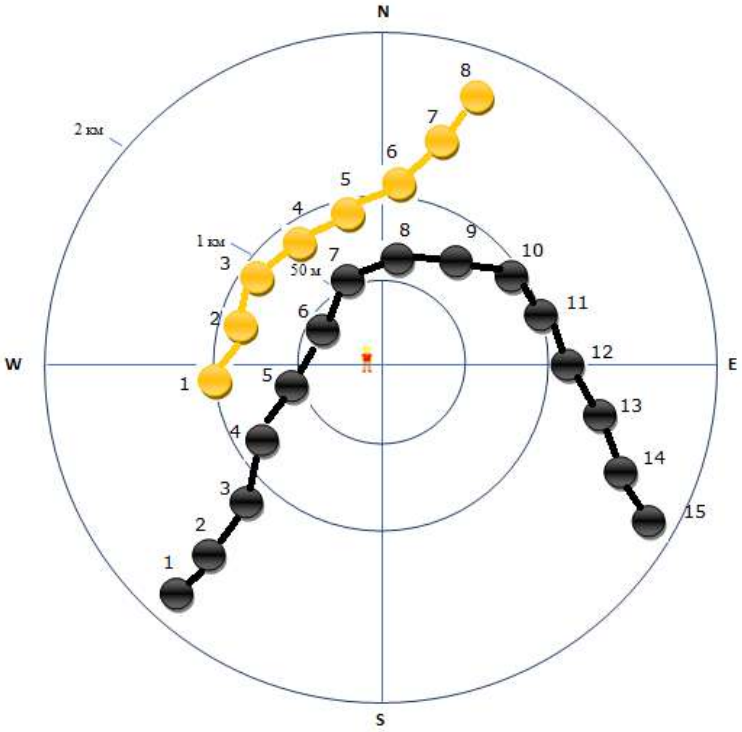


Fig. 70 Flight path (VP 14), 28.05.2021

Table 78 Target species log (VP 14), 28.05.2021

	Circus cyaneus	**15:35**	1 10m	2 15m	3 15m	4 20m	5 20m	6 25m	7 25m	8 20m							
	Aquila chrysaetos	**16:33**	1 120 m	2 125 m	3 125 m	4 140 m	5 140 m	6 145 m	7 145 m	8 120 m	9 120 m	10 120 m	11 120 m	12 120 m	13 120 m	14 120 m	15 120 m

VP 1

Date: 29.05.2021. Start and end time: 7:18 –10:18
Weather:
The air temperature: start 10°C end 18°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 2

Date: 29.05.2021. Start and end time: 11:03 – 14:04
Weather:
The air temperature: start 23°C end 30°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

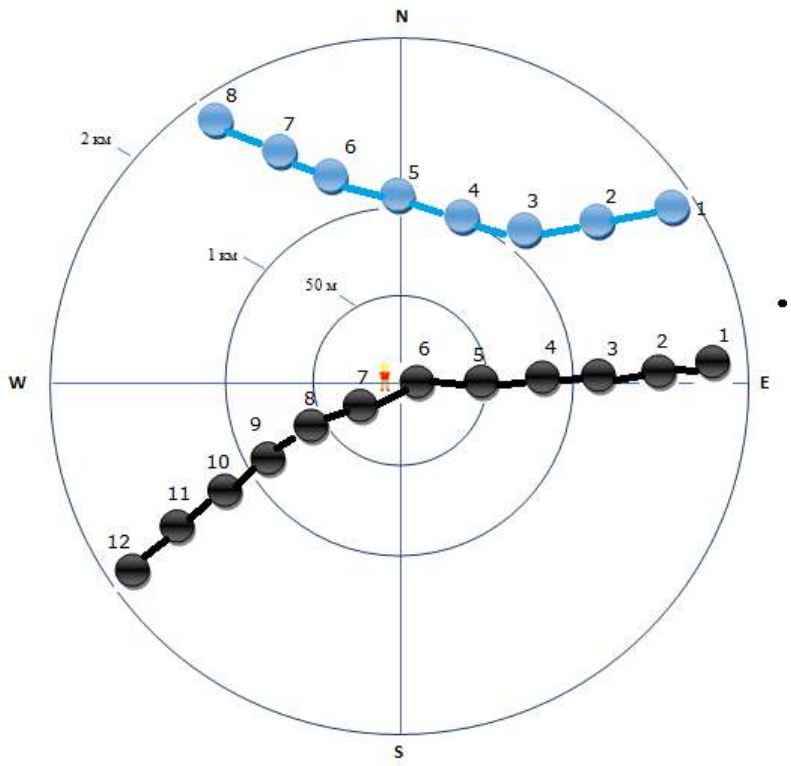


Fig. 71 Flight path (VP 2), 29.05.2021

Table 79 Target species log (VP 2), 29.05.2021

	Aegypius monachus	**11:29**	1 220m	2 220m	3 220m	4 200m	5 220m	6 220m	7 200m	8 200m	9 200m	10 220m	11 200m	12 220m
	Gyps fulvus	**11:32**	1 180m	2 185m	3 185m	4 180m	5 180m	6 185m	7 185m	8 180m				

VP 3

Date: 29.05.2021. Start and end time: 14:52 –17:52
Weather:
The air temperature: start 29°C end 25°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 4

Date: 30.05.2021. Start and end time: 7:13 – 10:14
Weather:
The air temperature: start 10°C end 18°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

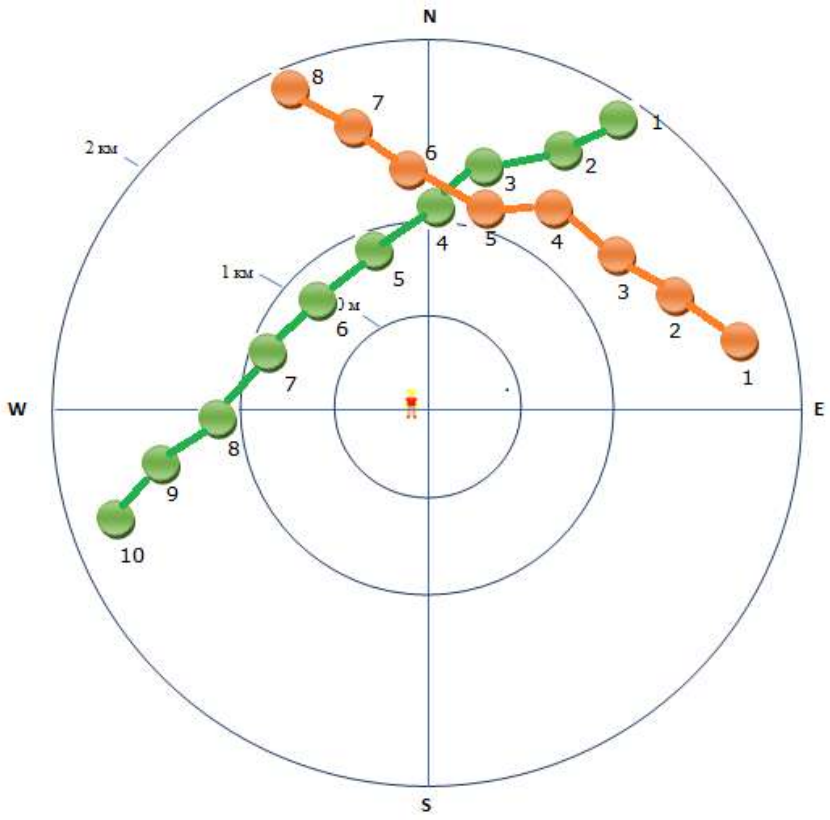


Fig. 72 Flight path (VP 4), 30.05.2021

Table 80 Target species log (VP 4), 30.05.2021

	Falco tinnunculus	**9:27**	1 10m	2 15m	3 15m	4 10m	5 10m	6 15m	7 15m	8 20m	9 30m	10 30m
	Buteo rufinus	**9:48**	1 100m	2 105m	3 105m	4 100m	5 100m	6 105m	7 105m	8 100m		

VP 5

Date: 30.05.2021. Start and end time: 10:56 –13:56
Weather:
The air temperature: start 23°C end 30°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 6

Date: 30.05.2021. Start and end time: 14:38 –17:38
Weather:
The air temperature: start 28°C end 25°C is sunny
Wind speed approx. (5-6 m/s) No precipitation
Primary species not found

VP 7

Date: 31.05.2021. Start and end time: 7:19 –10:19
Weather:
The air temperature: start 9°C end 19°C is sunny
Wind speed approx. (4-5 m/s) No precipitation
Primary species not found

VP 10

Date: 31.05.2021. Start and end time: 11:04 –14:04
Weather:
The air temperature: start 24°C end 31°C is sunny
Wind speed approx. (4-6 m/s) No precipitation
Primary species not found

VP 12

Date: 31.05.2021. Start and end time: 14:55 – 17:56
Weather:
The air temperature: start 28°C end 22°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

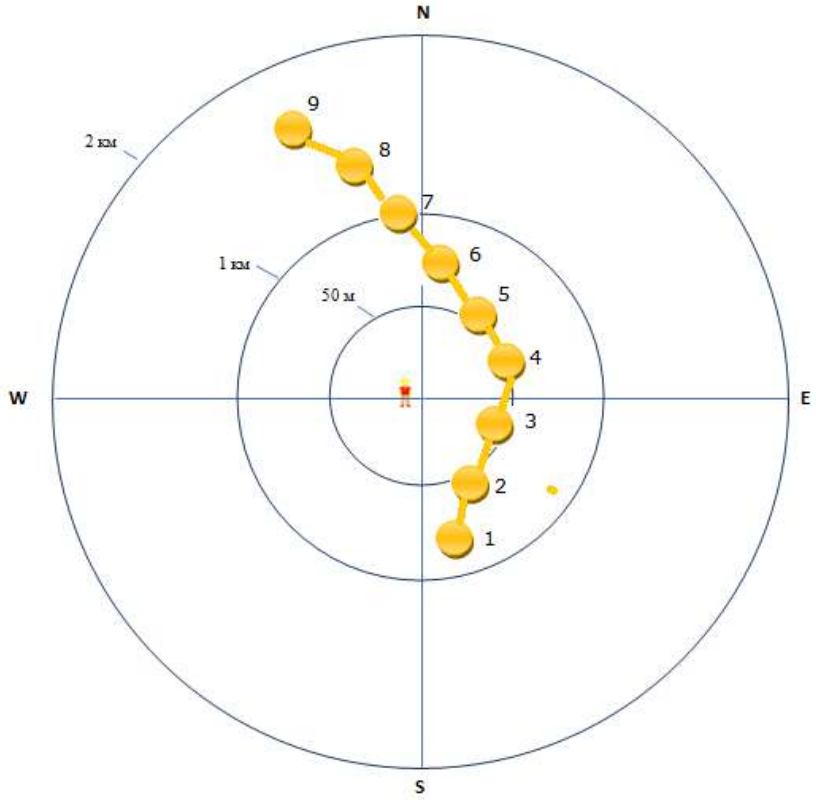


Fig. 73 Flight path (VP 12), 31.05.2021

Table 81 Target species log (VP 12), 31.05.2021

	Gypaetus barbatus	**16:53**	1 180m	2 185m	3 185m	4 180m	5 180m	6 185m	7 185m	8 180m	9 180m

VP survey results in June

VP 13

Date: 02.06.2021. Start and end time: 8:22 – 11:23
Weather:
The air temperature: start 14°C end 28°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation

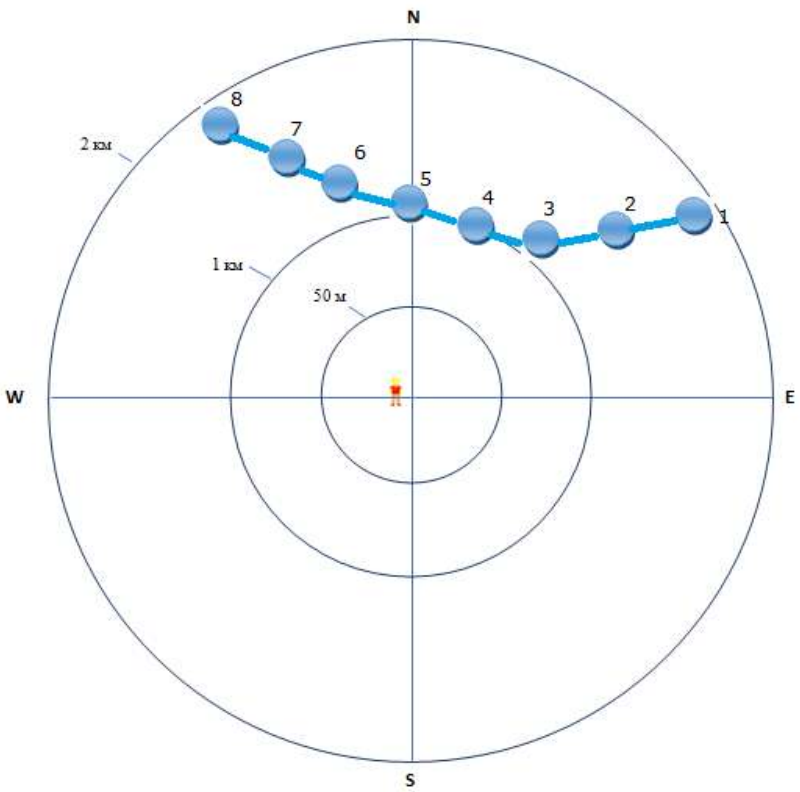


Fig. 74 Flight path (VP 13), 02.06.2021

Table 82 Target species log (VP 13), 02.06.2021

	Aegypius monachus	**9:28**	1 180m	2 160m	3 160m	4 165m	5 165m	6 170m	7 170m	8 170m

VP 14

Date: 02.06.2021. Start and end time: 13:08 – 16:08
Weather:
The air temperature: start 35°C end 32°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP 8

Date: 03.06.2021. Start and end time: 7:21 – 10:21
Weather:
The air temperature: start 16°C end 26°C is sunny
Wind speed approx. (3-4 m/s) No precipitation

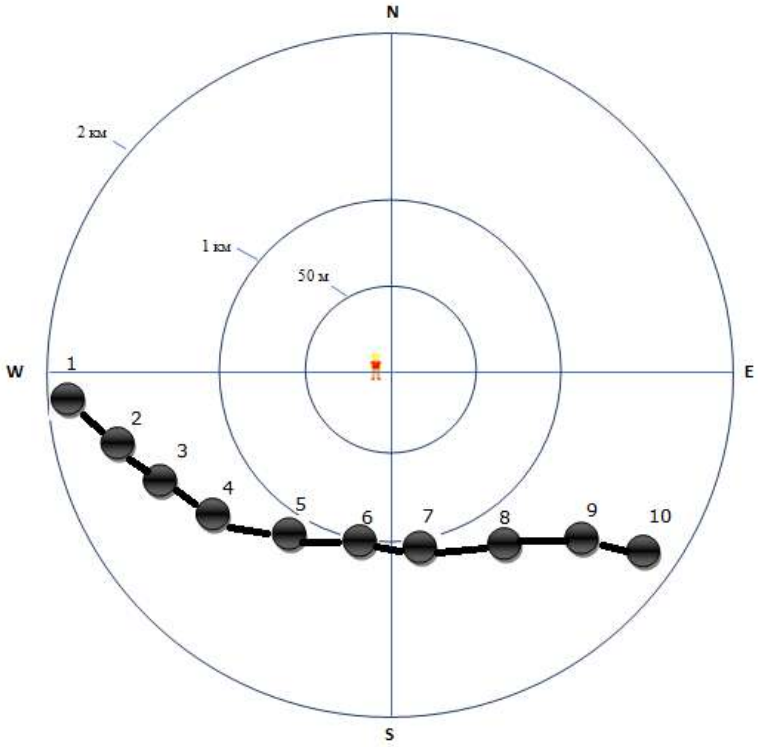


Fig. 75 Flight path (VP 8), 03.06.2021

Table 83 Target species log (VP 8), 03.06.2021

	Aquila chrysaetos	**8:23**	1 130m	2 130m	3 120m	4 125m	5 125m	6 120m	7 120m	8 120m	9 110m	10 120m

VP 11

Date: 03.06.2021. Start and end time: 11:05 – 14:05
Weather:
The air temperature: start 32°C end 34°C is sunny, hot
Wind speed approx. (1-2 m/s) No precipitation
Primary species not found

VP 9

Date: 03.06.2021. Start and end time: 14:52 – 17:52
Weather:
The air temperature: start 33°C end 29°C is sunny, hot
Wind speed approx. (3-5 m/s) No precipitation

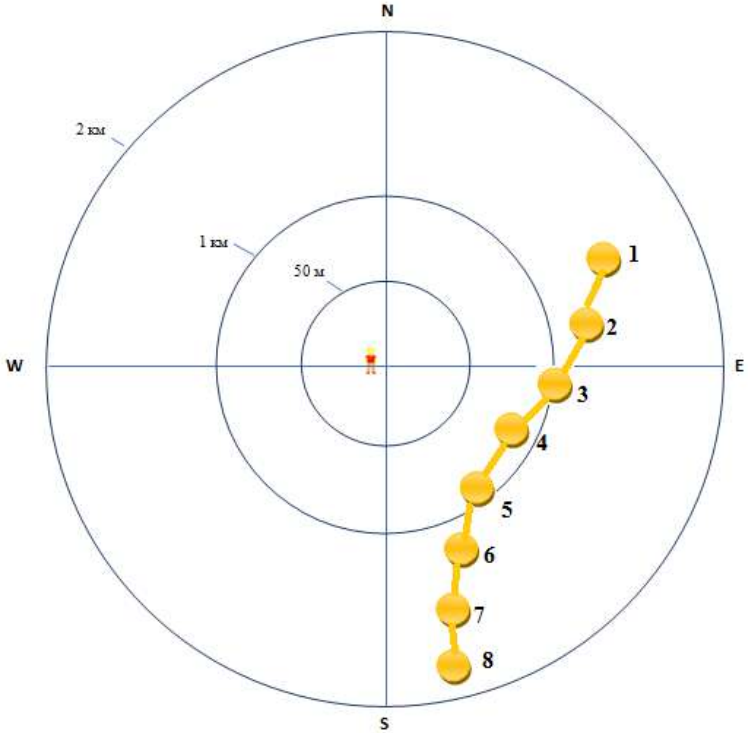


Fig. 76 Flight path (VP 9), 03.06.202

Table 84 Target species log (VP 9), 03.06.2021

	Neophron percnopterus	**15:16**	1 130m	2 150m	3 150m	4 145m	5 135m	6 140m	7 130m	8 130m

VP 1

Date: 04.06.2021. Start and end time: 7:18 – 10:18
Weather:
The air temperature: start 12°C end 23°C is sunny
Wind speed approx. (3-5 m/s) No precipitation

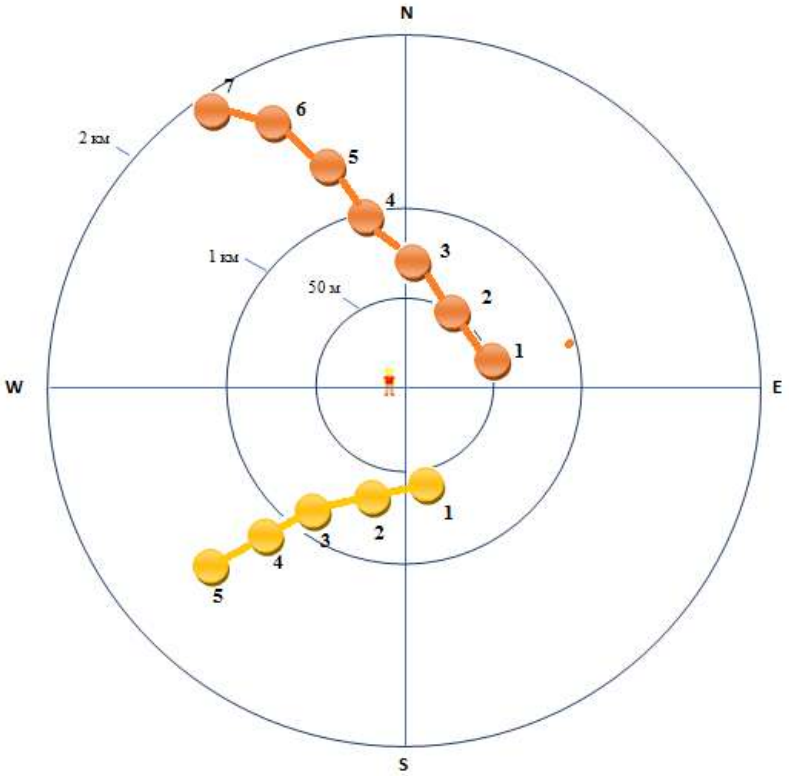


Fig. 77 Flight path (VP 1), 04.06.2021

Table 85 Target species log (VP 1), 04.06.2021

	Falco tinnunculus	**7:42**	1 15m	2 15m	3 10m	4 15m	5 15m		
	Buteo rufinus	**10:37**	1 75m	2 65m	3 60m	4 65m	5 65m	6 65m	7 65m

VP 2

Date: 04.06.2021. Start and end time: 11:03 – 14:05
Weather:
The air temperature: start 29°C end 35°C is sunny, hot
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 3

Date: 04.06.2021. Start and end time: 14:52 – 17:52
Weather:
The air temperature: start 32°C end 28°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation
Primary species not found

VP 13

Date: 05.06.2021. Start and end time: 9:16 – 12:16
Weather:
The air temperature: start 21°C end 34°C is sunny, hot
Wind speed approx. (1-3 m/s) No precipitation
Primary species not found

VP 14

Date: 05.06.2021. Start and end time: 13:38 – 16:41

Weather

The air temperature: start 42°C end 32°C is sunny, hot

Wind speed approx. (2-3 m/s) No precipitation

Primary species not found

VP 9

Date: 06.06.2021. Start and end time: 7:29 – 10:29
Weather:
The air temperature: start 16°C end 26°C is sunny
Wind speed approx. (4-6 m/s) No precipitation

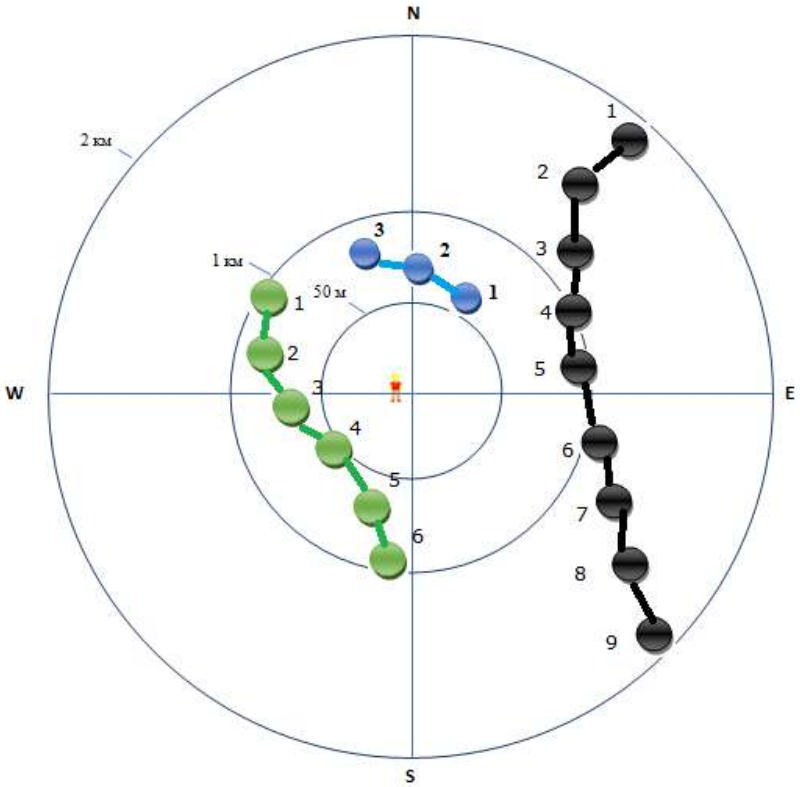


Fig. 78 Flight path (VP 9), 06.06.2021

Table 86 Target species log (VP 9), 06.06.2021

	Athene noctua (was sitting)	**7:34**	1 0m	2 5m	3 0m						
	Aquila chrysaetos	**9:56**	1 130m	2 130m	3 140m	4 155m	5 145m	6 145m	7 135m	8 135m	9 135m
	Falco tinnunculus	**9:59**	1 10m	2 15m	3 10m	4 10m	5 10m	6 15m			

VP 11

Date: 06.06.2021. Start and end time: 11:17 – 14:17
Weather:
The air temperature: start 29°C end 36°C is sunny, hot
Wind speed approx. (1-3 m/s) No precipitation
Primary species not found

VP 8

Date: 06.06.2021. Start and end time: 14:59 – 17:59
Weather:
The air temperature: start 33°C end 29°C is sunny, hot
Wind speed approx. (3-4 m/s) No precipitation
Primary species not found

VP 4

Date: 07.06.2021. Start and end time: 7:13 – 10:14
Weather:
The air temperature: start 16°C end 23°C is sunny
Wind speed approx. (3-4 m/s) No precipitation

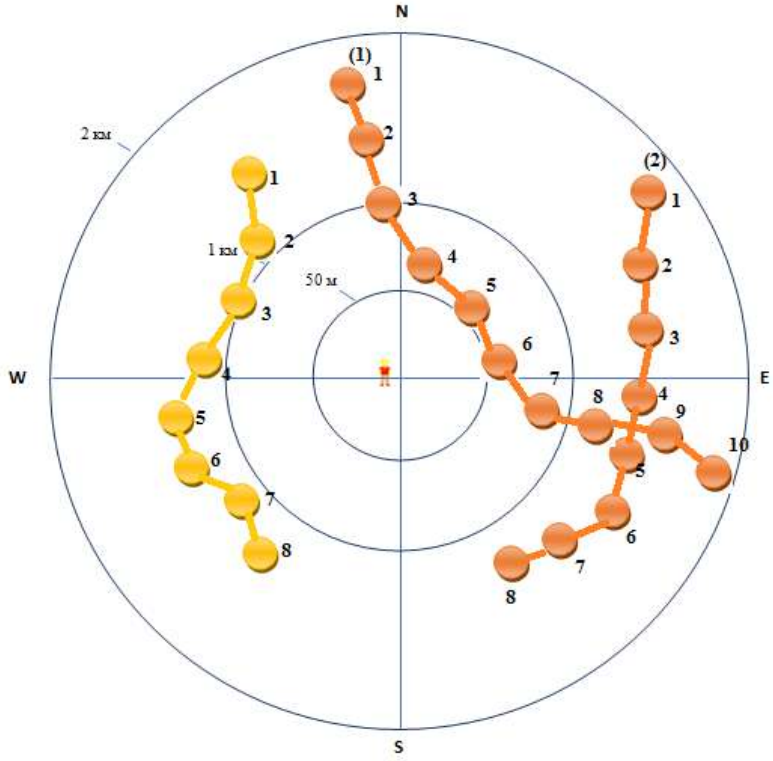


Fig. 79 Flight path (VP 4), 07.06.2021

Table 87 Target species log (VP 4), 07.06.2021

	Buteo rufinus (1)	**8:23**	1 30m	2 35m	3 35m	4 30m	5 30m	6 35m	7 45m	8 50m	9 60m	10 60m
	Neophron percnopterus	**9:56**	1 70m	2 65m	3 65m	4 60m	5 50m	6 45m	7 45m	8 40m		
	Buteo rufinus (2)	**10:04**	1 30m	2 35m	3 35m	4 30m	5 30m	6 35m	7 45m	8 50m		

VP 5

Date: 07.06.2021. Start and end time: 10:56 –13:56
Weather:
The air temperature: start 28°C end 37°C is sunny, hot
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP 6

Date: 07.06.2021. Start and end time: 14:38 – 17:38
Weather:
The air temperature: start 38°C end 32°C is sunny, hot
Wind speed approx. (1-2 m/s) No precipitation

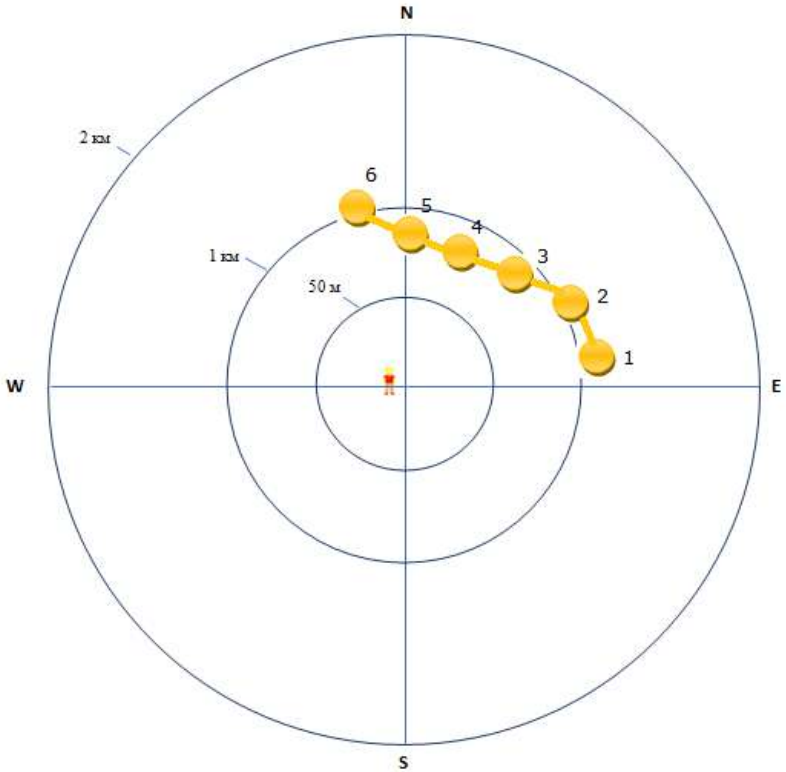


Fig. 80 Flight path (VP 6), 07.06.2021

Table 88 Target species log (VP 6), 07.06.2021

	Falco tinnunculus	**16:23**	1 10m	2 10m	3 10m	4 15m	5 15m	6 20m

VP 7

Date: 08.06.2021. Start and end time: 7:24 – 10:24
Weather:
The air temperature: start 17°C end 27°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation

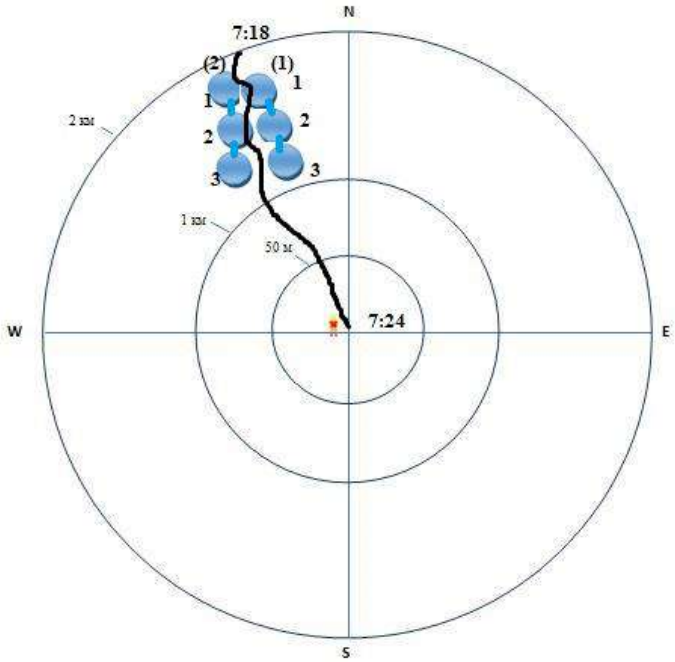


Fig. 81 Flight path (VP 7), 08.06.2021

Table 89 Target species log (VP 7), 08.06.2021

	Athene noctua (1)	**7:18**	1 0m	2 5m	3 0m
	Athene noctua (2)	**7:18**	1 0m	2 5m	3 0m

VP 10

Date: 08.06.2021. Start and end time: 11:07 – 14:07
Weather:
The air temperature: start 29°C end 36°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation

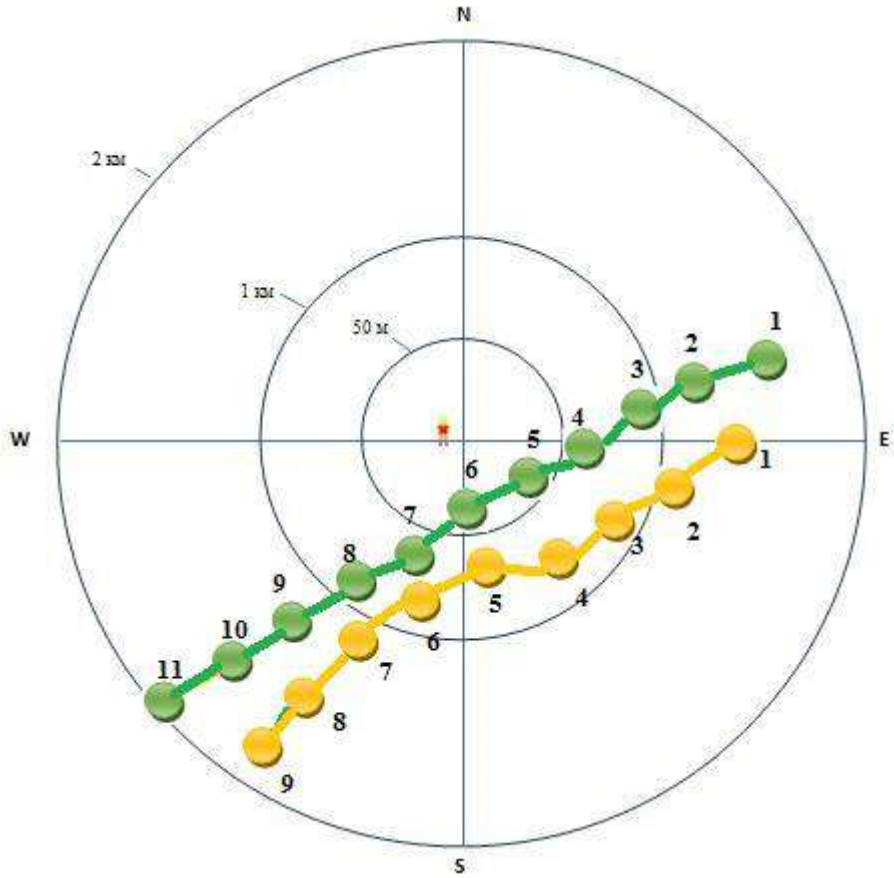


Fig. 82 Flight path (VP 10), 08.06.2021

Table 90 Target species log (VP 10), 08.06.2021

	Neophron percnopterus	**11:43**	1 190m	2 200m	3 220m	4 200m	5 200m	6 200m	7 220m	8 200m	9 200m		
	Gyps fulvus	**11:44**	1 220m	2 220m	3 220m	4 225m	5 225m	6 225m	7 225m	8 225m	9 225m	10 225m	11 225m

VP 12

Date: 08.06.2021. Start and end time: 14:58 – 17:58
Weather:
The air temperature: start 35°C end 30°C is sunny, hot
Wind speed approx. (2-3 m/s) No precipitation

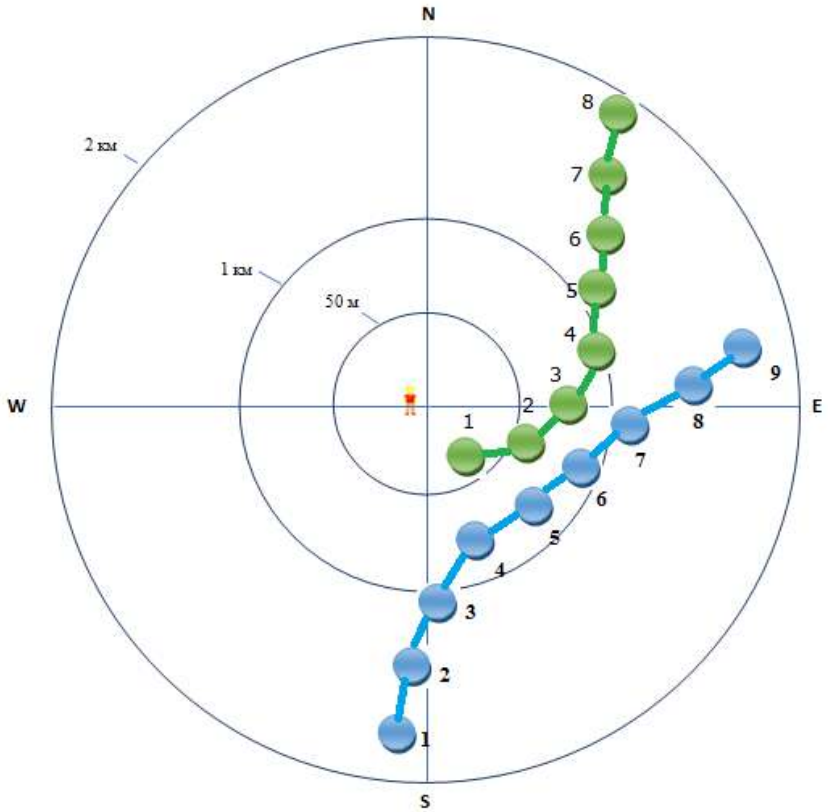


Fig. 83 Flight path (VP 12), 08.06.2021

Table 91 Target species log (VP 12), 08.06.2021

	Falco cherrug	**15:04**	1 10m	2 10m	3 20m	4 15m	5 15m	6 15m	7 20m	8 20m	
	Aegypius monachus	**16:02**	1 180m	2 180m	3 180m	4 180m	5 180m	6 190m	7 190m	8 190m	9 190m

VP 8

Date: 09.06.2021. Start and end time: 7:15 – 10:15
Weather:
The air temperature: start 16°C end 26°C is sunny, hot
Wind speed approx. (3-5 m/s) No precipitation

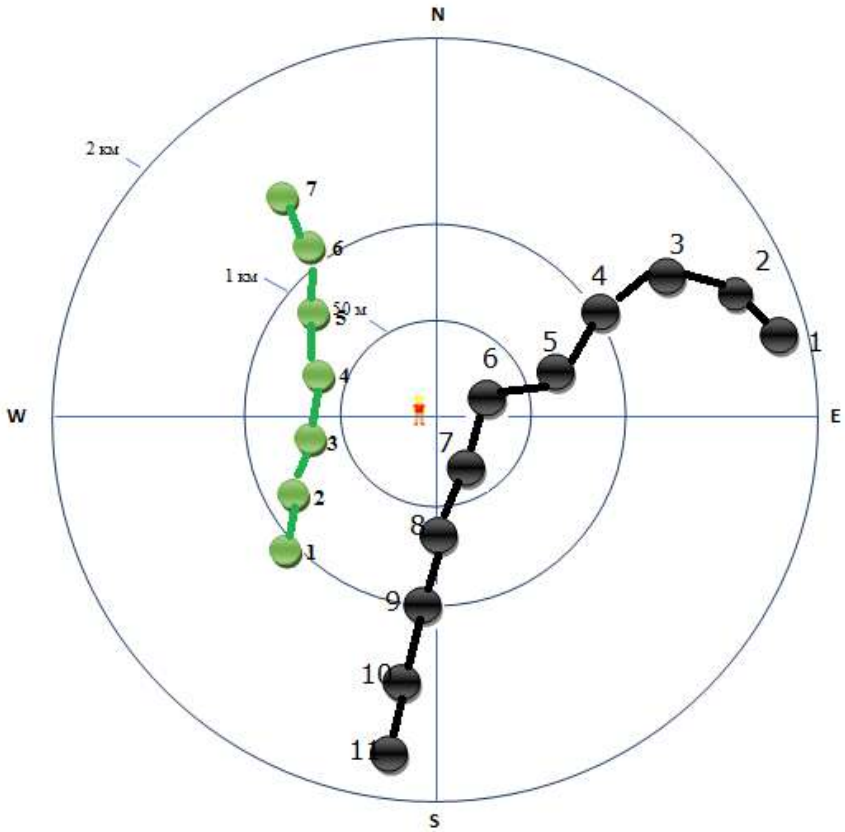


Fig. 84 Flight path (VP 8), 09.06.2021

Table 92 Target species log (VP 8), 09.06.2021

	Falco tinnunculus	**7:47**	1 10m	2 10m	3 10m	4 5m	5 5m	6 10m	7 10m				
	Aquila chrysaetos	**9:29**	1 190m	2 190m	3 190m	4 195m	5 195m	6 195m	7 190m	8 195m	9 195m	10 195m	11 195m

VP 11

Date: 09.06.2021. Start and end time: 11:04 – 14:06
Weather
The air temperature: start 30°C end 38°C is sunny, hot
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

VP 9

Date: 10.06.2021. Start and end time: 14:49 – 17:52
Weather:
The air temperature: start 34°C end 28°C is sunny, hot
Wind speed approx. (3-5 m/s) No precipitation

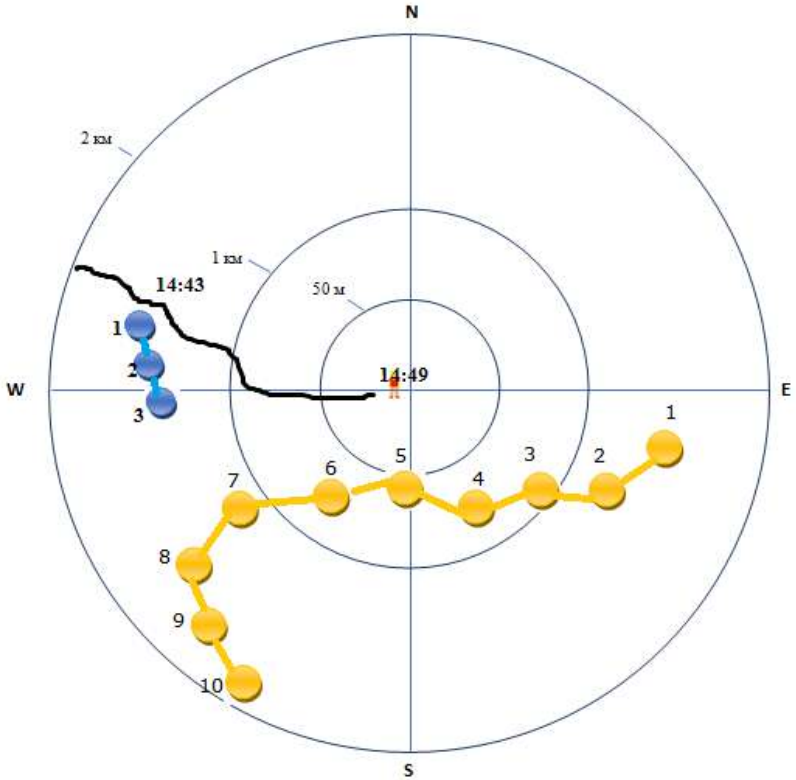


Fig. 85 Flight path (VP 9), 10.06.2021

Table 93 Target species log (VP 9), 10.06.2021

	Athene noctua (was sitting)	**14:43**	1 5m	2 5m	3 0m							
	Circus cyaneus	**16:16**	1 20m	2 20m	3 20m	4 25m	5 25m	6 25m	7 30m	8 15m	9 10m	10 15m

VP 13

Date: 10.06.2021. Start and end time: 8:28 – 11:28
Weather:
The air temperature: start 19°C end 31°C is sunny, hot
Wind speed approx. (3-5 m/s) No precipitation

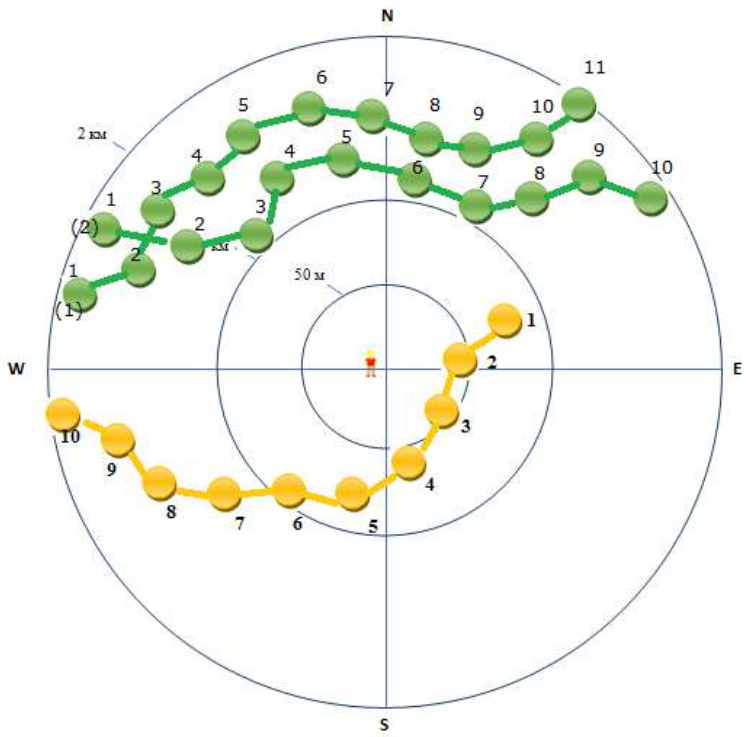


Fig. 86 Flight path (VP 13), 10.06.2021

Table 94 Target species log (VP 13), 10.06.2021

	Gyps fulvus(1)	**9:02**	1 220m	2 220m	3 220m	4 220m	5 220m	6 200m	7 220m	8 200m	9 200m	10 200m	11 200m
	Gyps fulvus(2)	**9:12**	1 220m	2 220m	3 220m	4 220m	5 220m	6 200m	7 220m	8 200m	9 200m	10 200m	
	Neophron percnopterus	**10:45**	1 170m	2 165m	3 165m	4 160m	5 150m	6 150m	7 150m	8 150m	9 150m	10 150m	

VP 14

Date: 10.06.2021. Start and end time: 13:06 –16:06
Weather:
The air temperature: start 37°C end 29°C is sunny, hot
Wind speed approx. (2-4 m/s) No precipitation
Primary species not found

ATTACHMENTS

Buteo rufinus - Long-legged Buzzard

Falco tinnunculus - Kestrel

Buteo buteo - Common Buzzard

Aquila chrysaetos - Golden Eagle

Aquila nipalensis - Steppe Eagle

Motacilla alba - White Wagtail	*Sitta tephronota* - Greater Rock Nuthatch

Athene noctua - Little Owl

Oenanthe finschii - Black-necked Wheatear

Aegypius monachus - Cinereous Vulture

Sylvia curruca - Lesser Whitethroat

Oenanthe oenanthe - Northern Wheatear	
Calandrella rufescens - Lesser Short-toed Lark	*Merops persicus* - Blue-cheeked Bee-eater

Oenanthe isabellina - Isabelline Wheatear	*Alectoris chukar* - Chukar Partridge

Gyps fulvus - Griffon Vulture

Anthropoides virgo - Demoiselle Crane

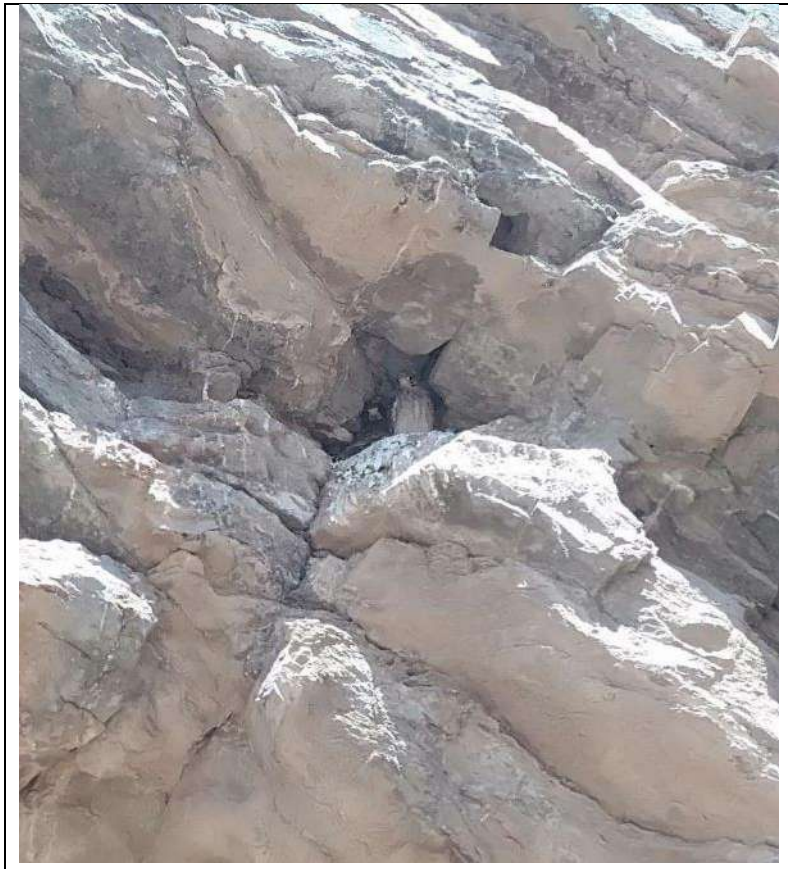
Anser anser - Greylag Goose and *Anser albifrons* - White-fronted Goose fly together

s

Gazella subgutturosa - Goitered Gazelle

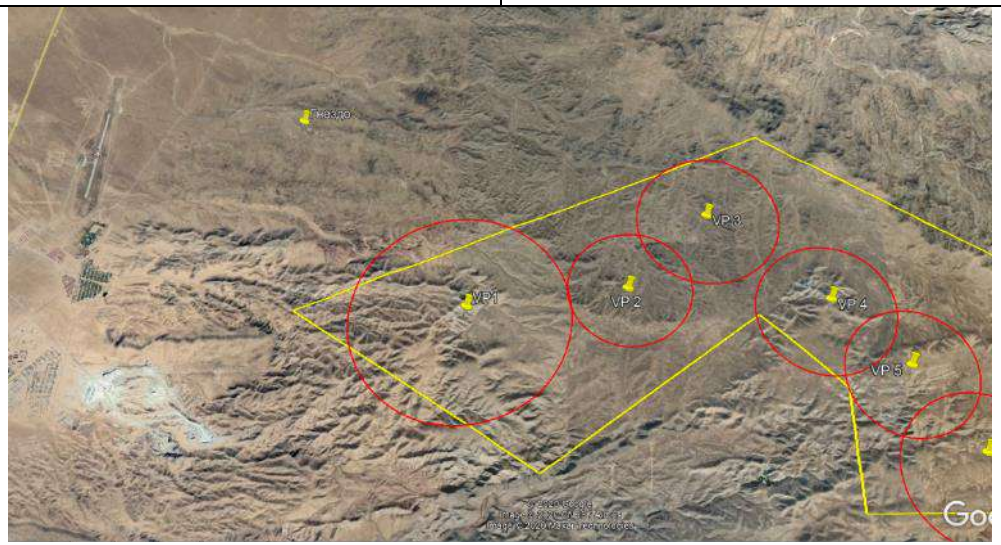
Stellio lehmanni - Turkestan agama

Allactaga elater - Small Five-toed Jerboa	Allactaga severtzovi - Severtzov's Jerboa
Spermophilus fulvus - Large Souslik	

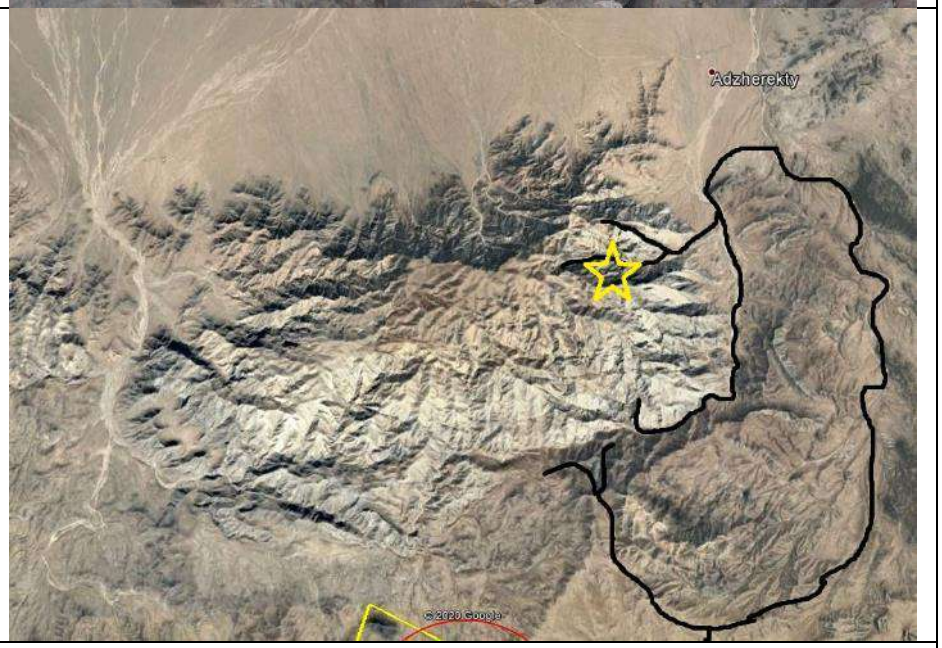


Kestrel’s nest 41°33'50.40"C, 64°30'59.40"B
(The nest was located next to the shepherds' yurta)

First nest of a large bird of prey 41°34'34.41"C, 64°30'41.71"B



Second nest of a large bird of prey 41°37'6.33"C, 64°16'47.54"B
This nest isn’t on the project territory itself, it’s in 3 km from the border of VP3



6 Nests of large predators on IBA territory (Mount Aktau)
41°40'6.30"C, 64°30'36.95" – this is the coordinates of a point in the middle between the six nests, the distance between nests is about 20-30 meters

A new nest on IBA territory (Mount Aktau) found in October 41°39'7.50"C, 64°25'34.40"B

Observation days on the territory of power lines and transects

OHL:

12.02.2021

06.03.2021

01.04.2021

02.04.2021

15.05.2021

29.05.2021

30.05.2021

Raptor nest search of the Project territory and the territory of IBA Aqtau mountain:

20.03.2021

25.03.2021

26.03.2021

27.03.2021

01.04.2021

02.04.2021

03.04.2021

04.04.2021

10.04.2021

20.04.2021

05.05.2021

15.05.2021

16.05.2021

19.05.2021

20.05.2021

21.05.2021

22.05.2021

23.05.2921

27.05.2021

28.05.2021

29.05.2021

08.06.2021

09.06.2021